What's New In TilePlus Toolkit 3?

TilePlus Toolkit 3 has several bug fixes and many performance and workflow features/improvements. For more information on these, see the Changelog file in the Plugins/TilePlus folder. Most of the visible changes are workflow and other improvements to Tile+Painter.

Contents

Foreword

This document provides a quick summary of changes to the TilePlus system; mostly regarding updates to the Painter window. For more information on any topic see the Painter or TilePlus guides.

Menu Changes

Tools/TilePlus menu reordered, and two new menu items have been added:

- Tools/TilePlus/Clear Painter Favorites
- Tools/TilePlus/Bundle Clipboard
- Tools/TilePlus/Utilities/Change Tile Flags

Two Project folder context menu items have been added:

- TilePlus/Bundle Project Prefabs
- TilePlus/Change Tile Flags

Tools/TilePlus/TilePlus Clear Tilemaps now checks for the TpNoPaint component on the selected GameObject or its children and won't clear any Tilemaps if that component is found.

- All window-opening shortcuts were removed.
- The Windows menu now includes entries for TilePlus/Tile+Painter and TilePlus/Tile+Painter Modifiers.
- The default mode change shortcut ALT+E has been changed to ALT+Q for ergonomic reasons.
- The Marquee-drag shortcut ALT+5 has been changed to ALT+1 for ergonomic reasons.

Change to Prefab/TileFab Bundler

The Bundler (Tools/TilePlus/Prefabs/Bundle Tilemaps) and other UI controls which invoke it, now asks you for a base name for the created assets. If you don't provide a name (if the text field is empty when the dialog closes) then the Grid and Tilemap names are used as before. A default name is always provided.

Additionally, the Bundler will refuse to operate if the scene has never been saved and it requires a Grid to be the active Selection in the hierarchy window.

Bundles can be transformed into Multiple Selection Picks with a new button in the bottom of the right column when the Bundle is being inspected in Painter.

Additionally, if you select more than one Prefab in a Project folder, use the right-click context menu item TilePlus/Bundle Project Prefabs.

Finally, the Bundler no longer creates copies of Prefabs when creating bundles: only the references to the existing Project folder assets are used.

Prefabs can be bundled from a Scene hierarchy or from a Project folder. This implies differences in how the transform information is archived:

- When bundling Prefabs from a scene, the stored rotation and scale are the rotation and localScale of the root GameObject of the Prefab in the scene hierarchy.
- When bundling Prefabs from a project folder, the stored rotation and scale are the rotation and lossyScale of the root GameObject of the Prefab in the Project folder.

New Compiler Definition

TpLog and TpLogWarning don't emit messages in builds unless `TPT_DEBUG` is set as a scripting define in the Player Settings.

Tile+Painter Changes and New Features

Renaming: The *History List* has been renamed to "*Favorites*" as that better describes its use.

Configuration options in Settings Tab

- The top portion of the Settings tab panel is now part of a ScrollView for a better appearance.
- A new slider control that adjusts the size of the sprite displayed in the rightmost column when a palette's contents are being displayed.
- A new slider control that adjusts the font size in lists. Note that you can make the display look awful as the resultant display is affected by the UI size and sprite size configuration settings.
- A new slider control used to adjust the relative size of the top and bottom toolbars. Click the Refresh button at the bottom of the Painter window to update the GUI.
- A new checkbox used to force synchronization of palettes between Painter and the Unity Palette window when both are open. Additionally, if this sync is active when the Painter window opens, Painter will use the current- or last-selected Palette from the Unity Palette.
- A new checkbox "Aggressive Selection". When checked, it looks for this situation:
    - The user changes hierarchy selection from a Tilemap to something else, then returns to a Tilemap. In that case, reactivate the TilemapPainterTool.
    - After that, if internally Painter sees a valid tilemap and if the previously-used action (Paint, Erase, etc.) was one with an effect on Tilemaps, reactivate the previous Tool.
    - If the Unity Tilemap Editor is open and has an active tool then aggressive selection is automatically disabled.
- A new checkbox that reverses the displayed Tilemap sort order when Tilemap sorting is enabled.
    - Sorting normally orders by Renderer sorting layer and then sorting order; in ascending order.
    - Reversing the result can more accurately reflect the display of Tilemaps in the hierarchy window, assuming that you arrange them in a certain order so some tiles appear 'in front of' others.
- A new checkbox "Simplified Updating in Play". This only appears when "Update in Play" is checked.
    - Painter's Hierarchy Change event tests to see if any Tilemaps have been added or deleted during play mode when this is ON.
    - See the Painter manual section "Updating in Play" for more information.
- The UI Size text field has been changed to a range slider.

Marquee Operation Changes

When using ALT+1 to drag a marquee in either Painting or Editing modes when the ERASE tool is selected, when the drag is completed by releasing the mouse button in addition the area within the marquee is erased. Note this only affects the currently selected Tilemap.

This is in addition to painting the marquee area with the current tile when the PAINT tool is selected.

You can now also use a Marquee to select an area of tiles when using the PICK or MOVE tools.

When you hold down ALT+1 but haven't yet begun the drag when using the Paint, Erase, Pick, or Move tools a 'D' appears in the on-screen text; this disappears when you begin to drag the mouse.

Miscellaneous Painter Changes

- The Action buttons toolbar only shows actions appropriate for the mode.
  - Paint mode: all buttons shown.
  - Edit mode: Pick, Help, Settings.
  - Grid Selection mode: Help, Settings.
- Four small buttons next to the Clipboard icons at the top right.
  - F: Copy the Clipboard object to Favorites (or Ctrl-Click on the rightmost Clipboard icon).
  - X: Clear the Clipboard (or click on the rightmost Clipboard icon).
  - B: Bundle Clipboard to a TpTileBundle asset (only available for Multiple-Selections).
  - I: Generate Icon for Multiple-Selections (only available for Multiple-Selections).
  - Note: Clicking or CTRL-Clicking the Clipboard image no longer has any effect.
- The Tile+Painter Transform Editor window is renamed to Painter Modifiers.
  - Painter Modifiers has been enhanced and can affect flags and color in addition to transforms.
  - See "Painter Modifiers".
- The Grid Selection mode view has two new buttons:
  - Create Bundle (see "Decomposition of Large TileSets into custom Tiles")
  - Apply Mod (see "Painter Modifiers")
- Two new plugins: FangAutoTile and FangLegacyAutoTile. See the notes at the end of this document.
- To prevent a Palette from appearing in Painter's list of Palettes just change the layer on the Palette prefab asset to anything other than Default. This doesn't affect the operation of the Unity Palette window.
  - Note that purchased assets that include Tilemap Palettes will often show a blank field for the layer.
- The configuration item: "Max # Tiles to Display" range is 50-9999.
  - The default was changed from 200 to 400.
  - If the number of tiles in a Palette is > "Max # Tiles to Display" then the list is truncated and highlighted with a yellow border.
  - Purpose: to avoid slowing down the Editor when huge palettes are encountered. Your author has encountered palettes with over 7000 tiles!
- When displaying a TileFab or Bundle in the Paint mode inspector (rightmost column), the **asset creation date was added to the display**.
- For the **Tilemaps list** (left column) and the **Tiles lists** (Paint: right column, Edit: center column) The small '+' icons used to show the presence of TilePlus tiles have been removed. Instead, the text is highlighted.
- Tilemaps list (left column): Hovering over an item shows the Sorting Layer name and Order in Layer addition to the normal tooltip. Also, if the Tilemap isn't empty, the Tilemap name is followed by the number of different types of Tiles on the Tilemap.
- Asset Version 3 for TileFabs and TileBundles.
  - The only difference between V2 and V3 assets is the addition of an Icon field for a sprite.
  - When the asset is selected and the Icon field is populated then Tile+Painter in Paint mode will display this icon in lists, the Clipboard, etc.
- Previews and most of the text drawn in the scene only appear in 2D mode. If the Editor isn't in 2D mode, the only text that'll appear is "!2D".
- The Settings tab's list of Painter plugins has been deleted. You can see this information in the System Info window from the Tools menu.
- Overwrite protection works differently: overwrite protection only works when the placed tile is a TilePlus tile. Normal Unity tiles don't have overwrite protection: they really don't need it.

TileFab Filtering

In Paint mode, when the "Show TileFabs" checkbox is checked, a new checkbox "Matches Only" appears.

When this is checked, TileFabs that don't match any existing scene Tilemap names or tags are filtered out and don't appear in the center Painting Source column.

Standard Palette instead of Lists of Tiles when Painting

In Paint mode, when the Show Palettes checkbox is checked, a new checkbox "Use Unity Palette" appears.

Unity Palette refers to the Unity Tile Palette window's palette display, that is, the view of tiles which looks like a Tilemap.

When a Unity palette is selected in the Painting Source (center) column and "Use Unity Palette" is checked, the Unity Palette is displayed rather than a list of tiles.

This functionality is currently deemed "experimental". However, this display is the exact UI Toolkit element that's used in the Unity Palette window. Palette editing is not supported.

You can paint single tiles or draw a marquee to select multiple tiles and paint them, just like a normal palette. However, since Tile+Painter does not use brushes, the Brush dropdown is omitted.

Please see the section on "Multiple Selection" for more information.

When "Use Unity Palette" is checked, the "Sync Palettes" configuration setting is internally forced active (the configuration setting isn't changed). If you use the Unity Palette's brush-select dropdown menu to select a brush that does not inherit from GridBrush (e.g., GameObject brush) the brush selection will revert to the Tile+Brush or the standard GridBrush.

Note that if you have both Tile+Painter and the Unity Tile Palette windows open at the same time it can be confusing since they both draw marquees in the Scene view. If you need to use both Painter and Palette, try changing the Scene Marquee and Text colors in Painter's setting panel.

Painter Favorites Improved

The Painter Favorites list is now stored in a configuration file which is saved in the filesystem. This improves the retention characteristics between editor sessions. *Note that the list is* <mark>no longer cleared</mark> *if you use the refresh button at the lower-left corner of the Painter window*. Use a new menu item: Tools/TilePlus/Clear Painter Favorites.

Favorites holds four types of paintable Objects in two Lists:

- Tiles, Prefabs, or Bundles
- Multiple Selection picks

These two lists aren't visible to you: they are needed because multiple selection picks are Scriptable Objects which can't be serialized. Hence, internally they're handled differently.

Multiple Selections include Multiple-tile Picks from the scene when you hold down ALT+1 to draw out a marquee border (a Scene Pick) and Multiple-tile Picks from the Palette display seen when 'Use Unity Palette' is checked (A Palette Pick).

Scene Picks are placed in the Clipboard (unless you hold down CTRL, which requires some dexterity). Palette Picks are only ever placed in the Clipboard.

Click the Clipboard's F button or CTRL-Click on the Clipboard image to add either sort of Pick to Favorites.

> If a Multiple Selection Pick is in the clipboard, you can copy it into a Bundle by using the Tools/TilePlus/Bundle Clipboard menu command or clicking the Clipboard's B button. An Icon will be automatically generated and added to the Bundle.

When you have a combination of Tiles/Prefabs and Picks and you exit, at the next restart of Unity the Multiple Selection items are always displayed at the top of the list visible in Painter.

When viewing Favorites, each entry now displays a small 'X' that you can use to delete individual items. The Favorites list is limited to 32 items. The list is truncated when one or more new items are added, and the limit is exceeded.

Picks are identified as such and highlighted in a yellow color. The sprite shown on the item is the first non-null tile in the pick.

You can now add Project folder Prefabs to the Favorites List. Note that certain prefabs may do weird things or cause exceptions.

- For example, you can add a Palette prefab to the Favorites List and paint it. Surprisingly, this works.
- Adding a prefab with scripts which, when painted, execute out of context (e.g., have ExecuteAlways or ExecuteInEditMode attributes) may cause exceptions when painted.

Duplicate, null (deleted) Prefab assets, or null (deleted) tile assets found in the Favorites List are ignored and are deleted from the list. For example, if you select a tile or Prefab in the Favorites List and CTRL-Click the Clipboard (the thumbnail icon at the top right of the Painter window) the item won't be added to the Favorites List a second time.

Duplicates are more difficult to detect for Multiple Selection picks. To simplify and avoid lengthy operations, comparisons don't include all the tiles within the Selection.

View Tiles in a Bundle in Paint Mode
In Paint mode, the center column has a new option checkbox: **Bundle Tiles View.** This only appears if the "Show Tile Bundles" checkbox is checked.

When Bundle Tiles View is checked, the tiles from a Bundle are displayed in a list and can be painted individually. When unchecked, the Bundle is painted as a single item as usual.

Prefabs in the Bundle can be painted. Use the Painter Modifiers window to modify the offset from the mouse position, modify the scale, and/or modify the rotation by selecting one of the listed transforms and clicking ALT+V to modify the transform during Preview (the preview isn't affected). An unmodified transform will paint at the center of the tile cell.

Here's an example of how to use this productively by creating a Prefabs palette:

- Create a new 2D Scene and add a Tilemap.
- Add all the Prefabs that you want to paint as children of the Tilemap.
    - o Ensure that they are parented to the Tilemap. The positions don't matter unless you want to be able to paint all of these prefabs at once using the Bundle that you'll create with this process.
- Change Painter's mode to Grid Selection (the third mode button), select the Tilemap with the child prefabs in Painter's left column, and use ALT+1 to draw a marquee around the area that you want to save.
- Click on the Grid Selection that you just created (last item in the list).
- Click the Create Bundle button that's right under the list of Grid Selections.

- This will guide you to create a Tile Bundle. The Bundle won't have any tiles (unless you have painted some) but will have the Prefab references.

If you view this new Bundle in Painter with Bundle Tiles View checked, you can select and paint the prefabs as if this were a Palette of prefabs. If Bundle Tiles View is un-checked then you can paint all of the Prefabs at once just like any other bundle.

For quick Prefab painting, just select one or more Prefabs in a Project folder and use the **Add To Painter** Favorites *context menu item.*

About Painting Prefabs

You can use transform modification shortcuts like ALT+V, ALT+R/T/X/C/Z when previewing Prefabs. This does not affect the Prefab asset at all: when you release the mouse button, a copy of it is instantiated, has its transform modified (if only to set the position) and then painted. If you need to affect the Z-position of a Prefab prior to painting it, use the Painter Modifiers and ALT+V.

It's important to note that the preview you see when painting a prefab is an "asset preview," like the preview seen in an inspector. It's entirely possible to use the ALT key shortcuts to create a transform that'll place the prefab at a position and/or rotation that'd be invisible when the Scene view is in 2D mode. If it appears that your prefab disappears when you paint it, that's probably what happened.

Painting Prefabs from a Bundle

When previewing a Bundle (including previewing a TileFab, which is just a collection of Bundles) up to 128 prefabs can be previewed in total, per preview cycle (which happens several times per second depending on how fast you move the mouse). So, if you have a TileFab with several Bundles and the total number of Prefabs in all the Bundles is greater than 128 then some of the bundled Prefabs won't preview.

Aside from that, you can preview and paint Bundles (when the **Bundle Tiles View** option is unchecked) and TileFabs with embedded Prefabs. The preview works the same as described above: they're asset previews. The only difference is that the transform modification shortcuts are inoperative on groups of prefabs.

One advantage of using Bundles for prefabs is that any transform changes such as rotation and scale are preserved and then restored when the Bundle's prefabs are painted via Painter or calls to the TileFabLib library. Transform changes don't show in the preview, and the positioning during preview may be slightly incorrect due to integer math issues.

Prefabs and GridSelection

If there's a GridSelection when using the Paint tool and the current Object is a Prefab AND you click into the GridSelection then the entire selection will be filled with the Prefab, with transform modifications applied if done during preview (when moving the mouse) via a shortcut key.

Additionally, an area fill of Prefabs occurs if you drag out a marquee using ALT+1.

These actions mimic what's done with tiles.

Erasing or Modifying Prefabs

The Erase tool can't be used to delete Prefabs. The Rotate and Flip tools can't be used on Prefabs. Once placed, all further editing must be performed using normal Unity tools for GameObjects.

The only exception is when using the "TilePlus Clear Tilemaps" function from the Tools menu, from the context menu, or via the Clear Tilemaps button in the Grid Selection panel as that function erases all tiles and parented GameObjects in the entire Tilemap or group of Tilemaps, depending on what's selected in the hierarchy.

Enhanced Support for Multiple-tile selections.

Multiple Selection means selecting a group of tiles from a Tilemap in a scene or when the Painting Source is displayed as a UTE palette display (which is a Tilemap). In each case you draw out a marquee and when you release the mouse button the multiple-selection **Pick** is placed in the Clipboard.

Painter allows you to use such Picks just like any single tile, with a few restrictions. The set of tiles can be painted to the scene, can be archived in Favorites (just click the Clipboard 'F' button), or can be transformed to a Bundle asset with the Clipboard B button or the Tools/TilePlus/Bundle Clipboard menu command.

Picks can be rotated and/or flipped during tile preview (when the mouse is over the scene view and there's something in the Clipboard) in the same way as the UTE's GridBrush. But Painter can do some things that the UTE doesn't do:

- Rotation and Flip can be done on individual tiles in the array rather than just the entire set of tiles.
  - There are different shortcuts to select what type of operation can be performed.
- The Pivot point from where tiles are painted can be changed using ALT+E.
  - It's hard to explain but easy to see in action.

Note that a tile's flags can prevent rotation and flip if the Lock Transform bit is set.

You can use ALT+V to apply the selected Modifier from the Painter Modifiers window. However, if you then rotate/flip either individual tiles or the entire array, the modifier is removed. Hence, apply any modifiers last. Flag settings (Lock Transform or Color) affect whether a modifier has any effect.

Default modifiers are used when painting multiple tile selections; they're not applied until the painting actually occurs: generally not shown in preview.

Internally, Painter caches an unmodified Clipboard copy. If you are unhappy with what you see after rotations, or flips, use ALT+Z to restore the copy to the Clipboard.

Decomposition of Large TileSets into custom Tiles

Perhaps you have a TileSet that you bought on the Asset Store, Itch.io or somewhere like that. Often you need to paint more than one tile from such a set to create a complete visual object in the scene: a building might comprise a dozen or more tiles or something smaller like a sign might take two or three tiles.

With the Unity Palette or Painter's Palette display you can select a group in the palette and paint it – but you must recreate this selection every time although some 2023.X versions include a "brush picks" overlay which improves the situation somewhat.

Instead, you can create custom Bundle assets which comprise arbitrary compositions of only some of the Tiles in that TileSet. Check out the "Decomposition of Large…." in the Painter 3.0 manual.

Painter Modifiers

This has been enhanced by allowing mods to tile Color. An apply drop down field has been added to select what is modified. A Name field has been added to each item for search purposes, and the window has a Search field. When used, the list scrolls to the matching Name.

Painter's Grid Selection mode sports a new button "Apply Mod".

When there's an active Grid Selection, a selected Tilemap, and an active Mod (at least one Apply item is selected) then the Apply Mod button is enabled. If you click the button the Mod is applied to all tiles within the Grid Selection. Prefabs are not affected.

Just like when Painting and using mods, only the Tilemap is affected; the tile assets aren't modified.

This is handy when you want to, say, change the sprite color for a block of tiles. You can use the Apply field to select Color and use the Color picker widget to select a color.

Note that tile flags (Lock Color / Transform) need to be set false for color or transform changes to be applied. The system warns you if there's a mismatch.

Undo is supported for this operation.

The window menu for the Modifiers window has two functions: Save and Load. This can be used to save modifiers to a file in case you want to move them to another project.

When using "Load" you'll see this message: `ScriptableSingleton already exists. Did you query the singleton in a constructor?` It's harmless and can be ignored.

Support for "FANG" auto-tiles in Tile+Painter.

This uses two scriptable object class files: FangAutotileTpPlugin and FangLegacyAutotileTpPlugin.

DRAG the folder from Plugins/TilePlus/Editor/Painter/TpPainterPlugins/Fang to the root assets folder, or any other folder outside of the Plugins root folder.

Open the two files within this folder in your IDE and uncomment the code. You will get errors if you uncomment the scripts while they're within the Plugins folder.

Then create project assets of the two scriptable objects. You can put them in the same folder as the scripts.

Note that newly created TpPainterPlugins have the 'ignore this' toggle SET. Examine the assets that you just created and uncheck these toggles.

These auto tiles are from the "2D RPG topdown tilesets - pixelart assets MEGA BUNDLE" on the asset store [https://assetstore.unity.com/packages/2d/environments/2d-rpg-topdown-tilesets-pixelart-assets-mega-bundle-212921].

 As usual, you can see which plugins are loaded at the top of Painter's Settings panel.

NOTE that the palettes provided by the package author **do not have the layer set properly**: please examine those assets and set the layer to Default. If you don't do that then the palettes won't be recognized by Tile+Painter.