

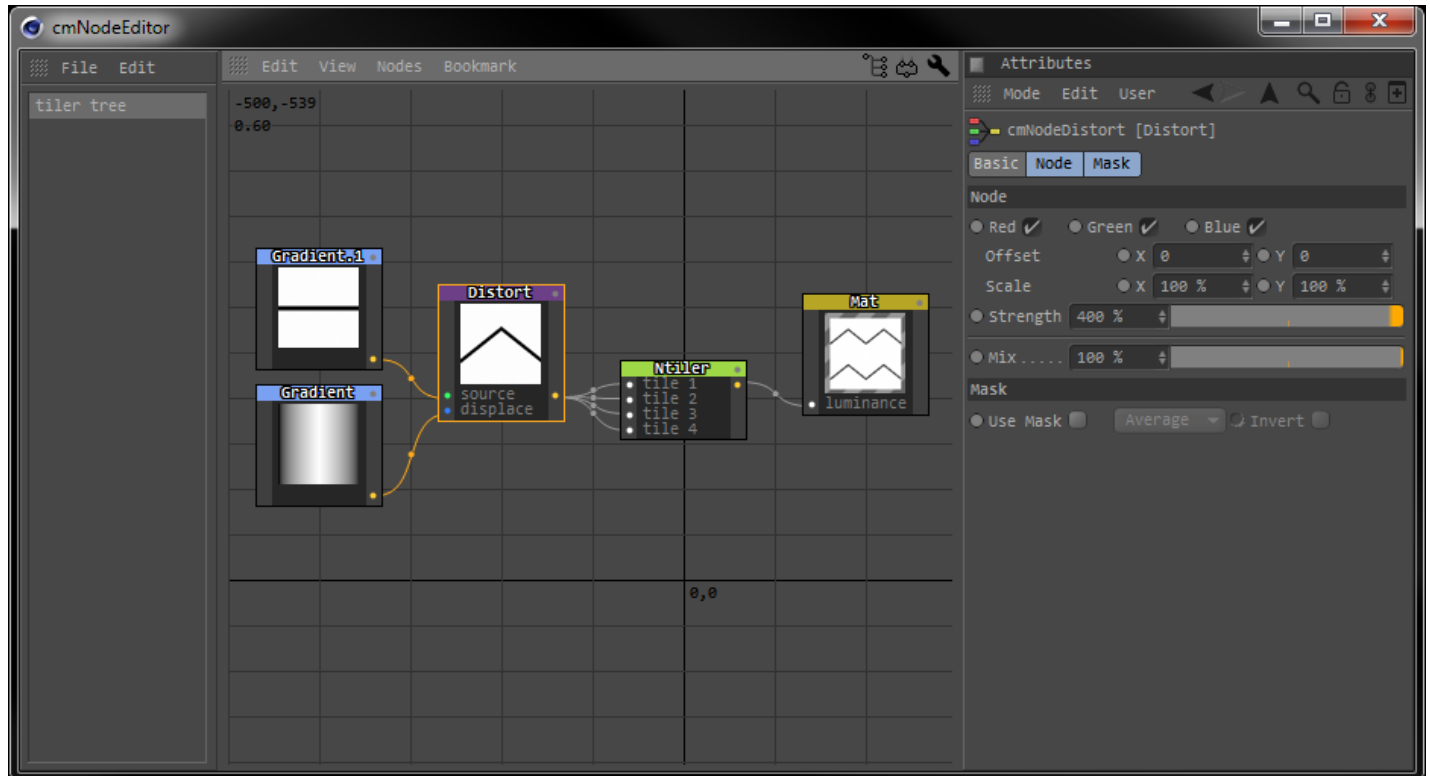
# cmNodes

version 1.5.74

<http://www.cmstuff.com>

for Cinema 4D Release 13 and higher

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# INSTALLATION

Any existing versions of cmNodes should be removed before installing this version.

The contents of the downloaded archive (cmNodes\_1.5.74.zip) should be directly unzipped to your Cinema 4D user plugins folder. Make sure to preserve folder information while unzipping.

To find your user folder, open Cinema 4D's preferences dialog, and at the bottom of the dialog click "Open Preferences Folder...". In your user folder you should have a "plugins" folder. This is where cmNodes should be installed.

# CHANGES

## 09-07-2014 - v1.5.74

- **FIX** - Complete overhaul of the preview system.
- **NEW** - Dropping a material onto the node editor without a tree will create a tree.
- **BUG** - Reflections now support compositing tags.

## 12-15-2013 - v1.5.05

- **BUG** - Postage stamps calculated in correct color space
- **BUG** - Copying and pasting nodes between documents
- **FIX** - Improved postage stamps
- **FIX** - Mask port hidden unless Mask option is enabled
- **FIX** - Re-categorized node menu
- **FIX** - Improved cmNodeEditor menus
- **FIX** - Added sRGB to Colorspace node
- **NEW** - Port labels on node
- **NEW** - Note icon on node to indicate notes and display notes on click
- **NEW** - Vray Advanced Material node
- **NEW** - Alt+MMB to pan
- **NEW** - Alt+RMB to scale
- **NEW** - Drag new wires directly from output port
- **NEW** - Tree Manager - load, save, copy, paste, delete, and rename trees
- **NEW** - Drag wire from anywhere on wire
- **NEW** - Context menu for wire's mid dot
- **NEW** - Postage stamp option - Small, Medium, or Large
- **NEW** - Tiler node
- **NEW** - Reflection node
- **NEW** - NoOp node
- **NEW** - Diffuse node
- **NEW** - Shadow node
- **NEW** - Fresnel node
- **NEW** - Distance node
- **NEW** - Use Bump option on Info node

- **NEW** - Tree bookmarks
- **NEW** - Condition node
- **NEW** - Projection node

#### **11-04-2013 - v1.1.38**

- **BUG** - Filter/Grade nodes causing artifacts with negative color values
- **FIX** - Improved render speed
- **FIX** - Better Material node previews
- **FIX** - Parameters in Node group moved to Basic
- **FIX** - Better Postage Stamp and Viewport update triggering
- **FIX** - Curves node defaulting to bezier
- **NEW** - Info node
- **NEW** - Invert node
- **NEW** - Colorize node
- **NEW** - Switch node
- **NEW** - High Pass node
- **NEW** - Check for Updates command
- **NEW** - Option to create nodes at mouse position
- **NEW** - Plugin commands for each node
- **NEW** - Simple and Gaussian modes added to Blur node

#### **10-25-2013 - v1.0.08**

- **BUG** - Crash on Postage Stamp toggle
- **BUG** - Crash while editing parameters while rendering
- **BUG** - Filter saturation not completely desaturating
- **BUG** - Noise previews losing octaves
- **FIX** - Previews more responsive
- **NEW** - Customizable node colors

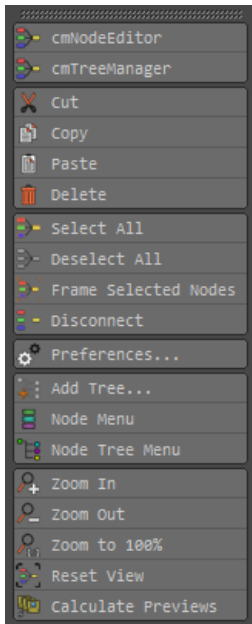
#### **10-14-2013 - v1.0.00**

- Initial release

# General Notes

- cmNodes maintains its own clipboard. The clipboard is not persistent, meaning that when you exit Cinema 4D the clipboard is cleared. But it is application wide, which means that you can copy nodes from one document and paste them into another.
- The grey dot in the top-right corner of each node is there to let you drag the nodes into other areas of Cinema 4D, such as link fields or the Xpresso editor. If a node is selected when dragging this dot, all selected nodes will be dragged.
- Nuke was the primary inspiration for the user interaction with the nodes and the node editor. I even borrowed some terminology from Nuke, such as Postage Stamps.

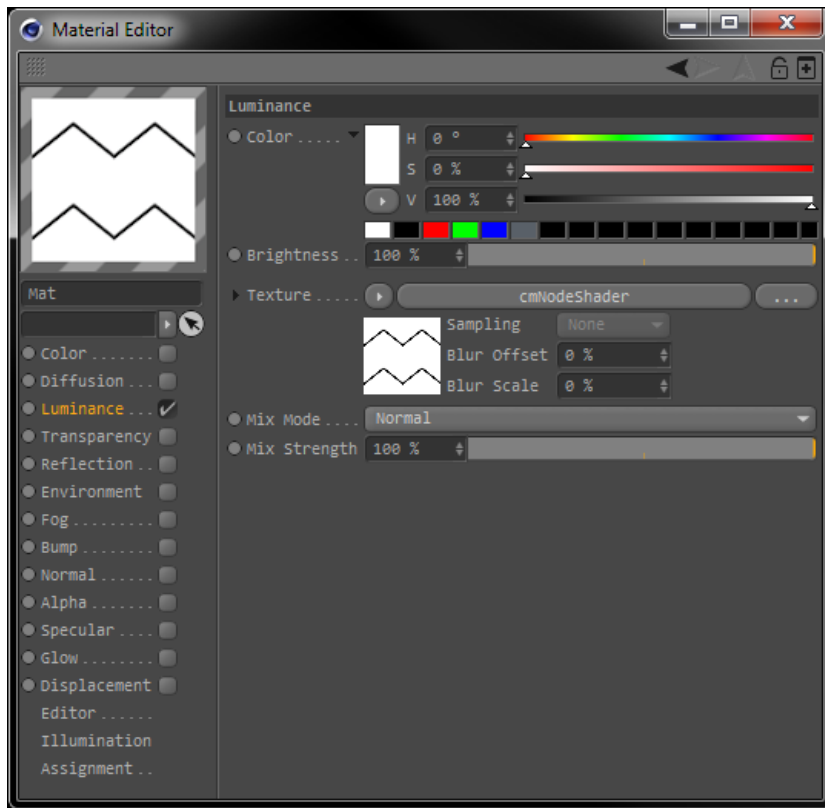
# Plugin Menu



- **cmNodeEditor** - Opens the editor dialog where you create and manipulate your nodes.
- **cmTreeManager** - Opens the tree manager dialog where you can add, load, save, copy, cut, paste, rename, and delete trees.
- **Cut** - Removes the selected nodes and places them in cmNodes' internal clipboard.
- **Copy** - Create a copy of the selected nodes and place them in cmNodes' internal clipboard.
- **Paste** - Take any nodes currently in the clipboard and insert them into the active tree.
- **Delete** - Deletes all selected nodes in the active tree.
- **Select All** - Select all nodes in the active tree.
- **Deselect All** - Deselect all nodes in the active tree.
- **Frame Selected Nodes** - Automatically pan the editor to the center of all selected nodes.
- **Disconnect** - Remove any wires from the selected node's input or output ports.
- **Preferences...** - Open the preferences dialog.
- **Add Tree...** - Create a new tree in the current document. Running this command will prompt you for a tree name.
- **Node Menu** - Display a categorized list of all available nodes.
- **Node Tree Menu** - Display a list of all trees in the current document.
- **Zoom In** - Increase the size of the editor, giving you a closer view of your nodes.
- **Zoom Out** - Decrease the size of the editor, making nodes appear smaller.
- **Zoom to 100%** - Reset the zoom level to default.
- **Reset View** - Reset the zoom level and position of the editor so it centers on 0,0.

- **Calculate Previews** - Force postage stamps to be recalculated.
- **cmNodes - Check for Updates** - Will check for a newer version of cmNodes and optionally open the download page in your web browser. Note, this command will appear in the root of the **Plugins** menu, since it has been implemented as a Python plugin, and all of the others are C++.

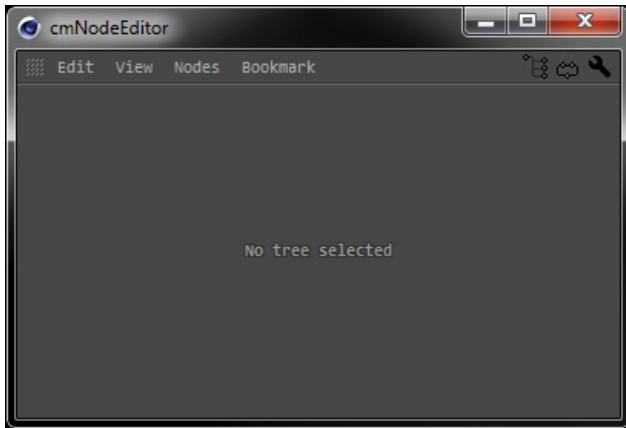
# cmNodeShader



In your shader list, you will notice one named `cmNodeShader`. This shader is the bridge between the `cmNodes` system and Cinema 4D's material system. The `cmNodeShader` will accept a Material or Output node from any tree in the document. Using `cmNodeShader`, anything in Cinema 4D that can accept a shader as a parameter can be connected to a node tree.



# cmNodeEditor



## Notes

This is where you create and edit with trees and nodes. All of the commands found in the menus and button have corresponding plugins which will allow you to set hotkeys or customize your interface to access the commands from anywhere within Cinema 4D.

If the current document has no trees, the editor will display the message "No tree selected". There are several ways to create a tree, but two that might not be obvious are double clicking or right-clicking editor window while this message is being displayed.

## Navigation

- **Pan** - Alt + Left Mouse Drag or Alt + Middle Mouse Drag
- **Zoom** - Mouse Wheel or Alt + Right Mouse Drag
- **Reset Zoom** - Middle Click
- **Reset View** - Ctrl + Right Click

# Nodes

## Connecting Nodes

- To connect a node simply drag the output port of one node onto the input port of another. There are checks to ensure that you cannot create cyclic dependencies, so if two nodes won't connect check to see if one is already an ancestor of another.
- To disconnect a node, click on a node's input port and start dragging, select the node and run the **Disconnect** command, or hover over a wire and start dragging. You can also hold the **Control** key and drag from a node's output port.
- To insert a node (let's call it **Node C**) between two connected nodes (**Node A** and **Node B**), drag **Node C** over the circle that is drawn at the center of each wire. When you're within range the wire will be highlighted. Once a wire is highlighted drop the node and it will be inserted. This will only work if **Node C**'s first input and output ports are free. You can also right click on a wire's mid dot and choose a node from the context menu, which will insert a new node that will be connected to the wire.
- To create a new node and automatically connect it to an existing node, right click over one of the existing node's ports. This will open the node menu, and the node that you create will be connected to the existing node.

## Selecting Nodes

- Holding **Shift** will toggle a node's selection.
- You can also drag a rectangle to select multiple nodes.
- To select a node and all of its ancestors, hold down Control and click on the node.

## Postage Stamps

- Postage Stamps are small preview of the node's output that is drawn on the actual node. Any node can have a postage stamp. To enable it select a node and in the node's properties, under the **Basic** group, enable the Postage Stamp checkbox. Or to quickly toggle a node's postage stamp, double click anywhere on the node.

## Disabling a Node

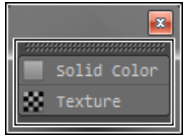
- When a node is disabled its first input will be passed through to its output, meaning that the node is bypassed without having to disconnect it.
- To disable a node, go into the node's properties and under the **Basic** group enable the Disable checkbox. Or to quickly toggle a node's postage stamp, hold down **Alt** and double click on the node.

## Exploding Materials

- You can take existing materials and "explode" them into a node based material. To do this simply take an existing material and drag it onto the node editor. This will only work for standard Cinema 4D channel materials, and **Vray Advanced Materials**.
- Because there is not a one-to-one mapping between existing shaders and cmNodes, a material will only be exploded one level deep.

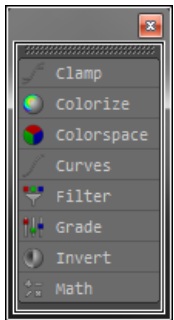
# Node Types

## Input



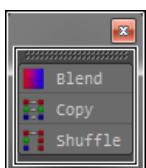
- **Solid Color** - Output a solid color.
- **Texture** - Can load any shader or image.

## Adjust



- **Clamp** - Limits the value of its output to specified minimum and maximum colors.
- **Colorize** - Maps the input node to a user defined gradient.
- **Colorspace** - Converts between Linear, HSL, HSV, or sRGB.
- **Curves** - Use a spline control to adjust the output.
- **Filter** - A fairly close reproduction of Cinema 4D's filter shader.
- **Grade** - Straight out of Nuke, this gives you fine control over color adjustments.
- **Invert** - Inverts the color of the input node.
- **Math** - Allows you to perform simple mathematical calculations on two nodes. Options are Add, Subtract, Multiply, Divide, Minimum, and Maximum.

## Channels

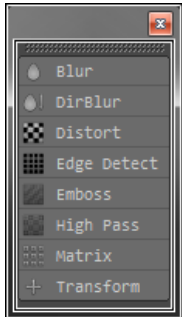


- **Blend** - Merge the outputs from two nodes using a wide selection of photoshop style blending

modes (plus Levir, Grain Merge, and Grain Extract).

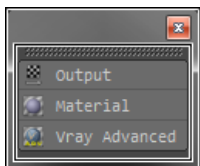
- **Copy** - Copies a color channel from inputA to inputB.
- **Shuffle** - Allows you to rearrange your input channels.

## Effects 2D



- Remember that when using shaders (even images are provided to us through shaders) we are working in UV space, not pixel space.
- Values may have to be adjusted drastically depending on the size of the area that your material must cover.
- **Blur** - A simple blur effect. The density controls the number of discrete steps between the sampled UV coordinate and the Size.
- **Dirblur** - A directional blur with a controllable angle. The density controls the number of discrete steps between the sampled UV coordinate and the Size.
- **Distort** - Use one input to distort (or warp) another.
- **Edge Detect** - Find edges in the input image. Edge detection methods include Sobel, Prewitt, and Kirsh.
- **Emboss** - Apply a fake bump mapping effect.
- **Matrix** - Apply a 5x5 convolution matrix to the input.
- **Transform** - Move, scale, or rotate the input.

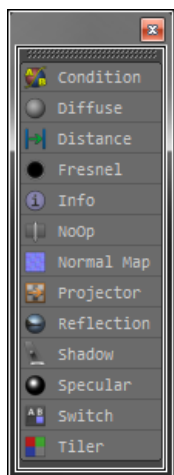
## Output



- **Output** - Allows you to connect the input to a **cmNodeShader**, allowing you to use the nodes to drive material channels or any parameter that accepts a shader input.

- **Material** - Much like the output node, the **Material** node allows you to connect its inputs to a **cmNodeShader**. However the **Material** node can be linked to a Cinema 4D material, allowing automatic updating of material channels.
- **Vray Advanced** - Just like the **Material** node, but it works with the **Vray Advanced** material.

## Utility



- **Condition** - Like the **Colorize** node this node will map the input node, but the input will be mapped to up to 10 other nodes rather than a gradient. There are controls for distribution and falloff.
- **Diffuse** - Renders the diffuse illumination on an object. This does not include textures, only the raw illumination from the selected light sources.
- **Distance** - Renders the distance to reflected objects. This can be used to create fading reflections.
- **Fresnel** - Renders a Fresnel effect on an object using a user defined **IOR** (index of refraction).
- **Info** - Outputs various information about the object being shaded.
  - **Facing Ratio** - Outputs 1.0 for normals that are perpendicular to the viewing angle, and 0.0 for normals that are parallel to the viewing angle.
  - **Object Color** - Outputs the color of an object as specified by that object's **Use Color** attribute.
  - **UV Coordinates** - Outputs the UV coordinates for an object.
  - **Camera Distance** - Outputs the distance from the object to the camera.
  - **Normals (Object)** - Outputs the object's normals in **Object** space.
  - **Normals (Camera)** - Outputs the object's normals in **Camera** space.

- **Normals (World)** - Outputs the object's normals in **World** space.
- **Normal Direction** - Outputs 1.0 for normals facing towards the camera, 0.0 for normals facing away from the camera.
- **NoOp** - No Operation.
- **Normal Map** - Convert the input to a tangent space normal map.
- **Projector** - Alters the projection of the input node. Like Cinema 4D's built in **Projector** shader.
- **Reflection** - Renders reflections for an object with a variable falloff. This is not meant for the **Reflection** channel, since the output is a rendered reflection.
- **Shadow** - Outputs 1.0 where shadows are cast from the selected light sources.
- **Specular** - Renders specular highlights.
- **Switch** - Chooses between up to 10 input nodes.
- **Tiler** - Accepts 4 inputs, mapping each one to a quadrant of the output.

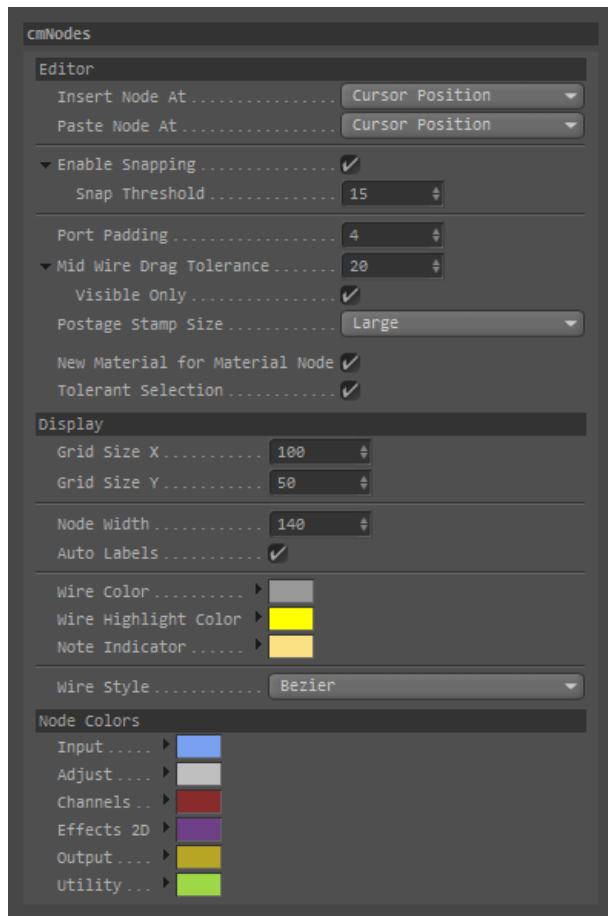
## Shaders

- The Shaders menu lists all available shaders in Cinema 4D, and when selected a texture node will be created with the shader loaded. Note that the categorization of the shaders in this menu will not match the categorization in the standard Cinema 4D shader menu.

## Notes

- Any nodes with a channel select (red, green, and blue checkboxes at the top of the node parameters) can be set to only operate on a specific color channel. Deselecting a channel will cause that channel to be bypassed.
- Any nodes with a mask input will have a **Mask** section in the node properties. The mask controls which parts of the incoming data are affected by the node. Note that the **Mask** port only appears when the mask is enabled.
- When you fill in the **Note** field in a node's **Basic** tab, a yellow box will be drawn at the top-left corner of the node. Clicking on this box will display a dialog with the contents of the **Note** field.

# Preferences



## Editor

- **Insert Node At** - Defines where a node is positioned when it is created. Choices include:
  - **Cursor Position** - Node will be created under the mouse coordinates unless the mouse is outside of the editor window, in which case the node will be created as close to the mouse position as possible without leaving the viewing area.
  - **Tree Origin** - Node will be created at 0,0.
  - **View Center** - Node will be created in the center of the viewing area.
- **Paste Node At** - Defines where a node is positioned when it is pasted from the clipboard.

Choices include:

- **Cursor Position** - Node will be pasted under the mouse coordinates unless the mouse is outside of the editor window, in which case the node will be created as close to the mouse position as possible without leaving the viewing area.
- **Tree Origin** - Node will be pasted at 0,0.
- **View Center** - Node will be pasted in the center of the viewing area.



- **Original Position** - Node will be pasted in the same location as when it was originally copied.
- **Enable Snapping** - Will snap the center of the node to grid lines.
  - **Snap Threshold** - Defines how close a node must be to a grid line before snapping.
- **Port Padding** - Defines the area around a port where the mouse can click and still hit the port.
- **Mid Wire Drag Tolerance** - Defines the area around a wire's mid dot where the mouse can click and still hit the dot.
  - **Visible Only** - When enabled only wires connected to visible nodes will be checked for mouse interaction.
- **Postage Stamp Size** - Sets the size of the **Postage Stamp** on a node. Choices include **Small**, **Medium**, and **Large**.
- **New Material for Material Node** - When enabled a new material will be created when you create a new **Material** node.
- **Tolerant Selection** - When enabled the node selection area only has to intersect with a node to cause a selection, otherwise the entire node must be within the selection area to be selected.

## Display

- **Grid Size X** - Defines the spacing of vertical grid lines.
- **Grid Size Y** - Defines the spacing of horizontal grid lines.
- **Node Width** - Defines the width of each node.
- **Auto Labels** - Enables or disables automatic labels on nodes, such as the selected operation on the Math node.
- **Wire Color** - Sets the color of non-active wires.
- **Wire Highlight Color** - Sets the color of active or highlighted wires.
- **Note Indicator** - Sets the color of the **Note** indication square in the top-left corner of a node.
- **Wire Style** - **Bezier** or **Straight**.

## Node Colors

- Defines the color of nodes in each category.

# Contact

Feel free to head to <http://www.cmstuff.com> and ask questions or leave suggestions in the comments. Or to contact me directly visit: <http://www.cmstuff.com/contact>

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