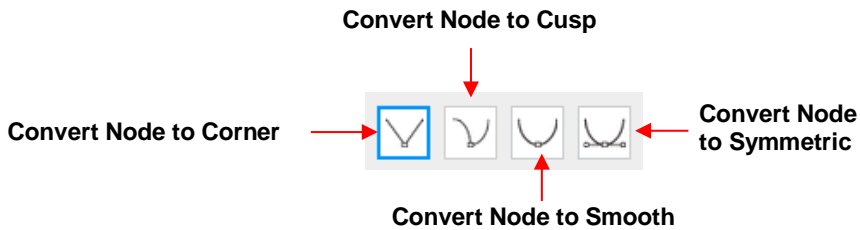


# SCAL6 Node Editing Expanded Tutorial

- This tutorial contains some of the same instructions presented in the SCAL6 User Manual plus some additional examples of node editing / reshaping a path.

## Reshaping a Path

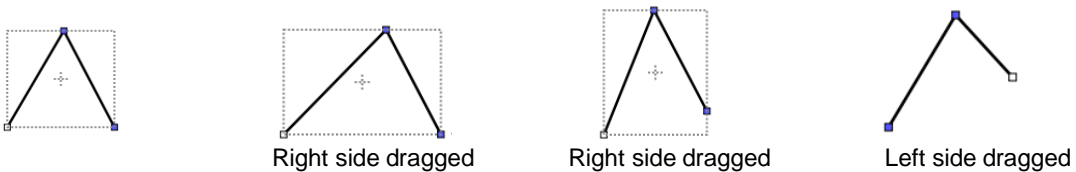
- With the **Shape Tool** selected, you'll observe four icons in the **Tool Options**. The purpose of each option is to convert one or more selected nodes to that type of node:



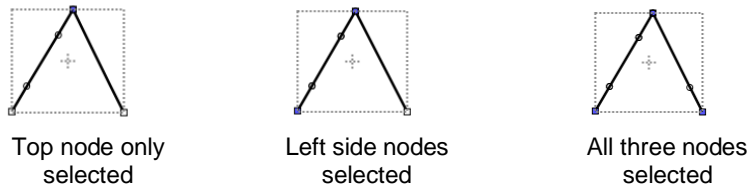
- One or more nodes are highlighted and then the appropriate icon selected. These same four functions can also be accessed by right-clicking and selecting **Path>Convert Node to**.
- To illustrate each one of these options, a simple path with a sharp corner will be used. This shape is already in **Corner Node** mode. To change to a different mode (in the examples that follow the first one), the top node is selected and then the option is clicked from the **Tool Options** or using the right-click and **Path>Convert Node to** menu option.



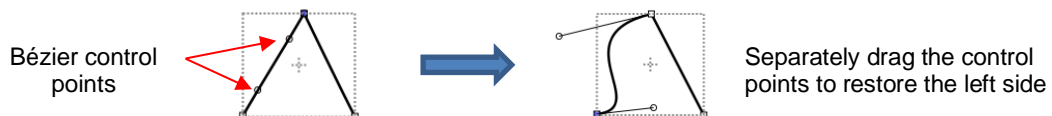
- ◇ **Corner Nodes:** These are the nodes that make up straight-line shapes such as rectangles, squares, triangles, stars, etc. Once selected, the shape will appear as below and either path can be moved as was demonstrated in the prior *Section 6.11.1*.



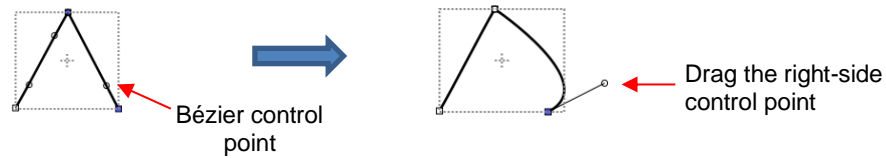
- ◇ **Cusp Nodes:** In this mode the Bézier control points appear and can be moved independently. First note how the paths appear when in this mode, depending on how many of the adjacent nodes are selected:




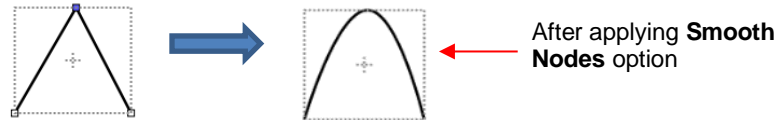
- The dots along the path are Bézier control points which are not linked to one another. You can freely drag either or both to create curves:



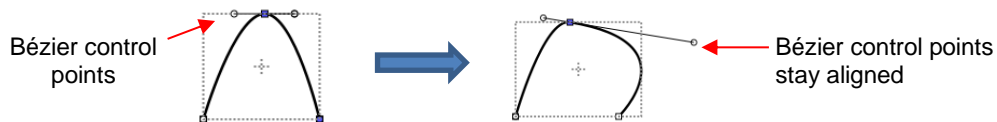
- In the case where there is a single Bézier control point on the right side, you can again drag the control point to create a curve:



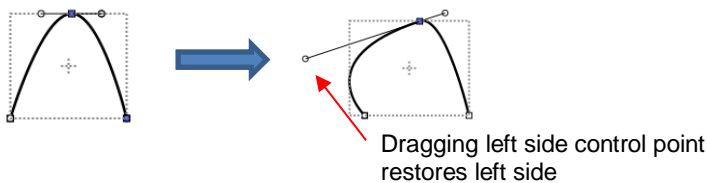
- ◇  **Smooth Nodes:** In this mode the Bézier control points always stay in a straight line. Notice that when you convert to **Smooth Nodes**, the shape immediately forms a curve:




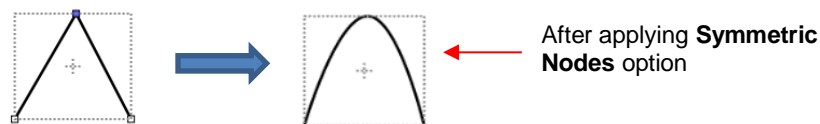
- When the newly formed shape is selected again, the Bézier control points appear in a straight line. If you move one, the other will move as well, in order to maintain that straight line:



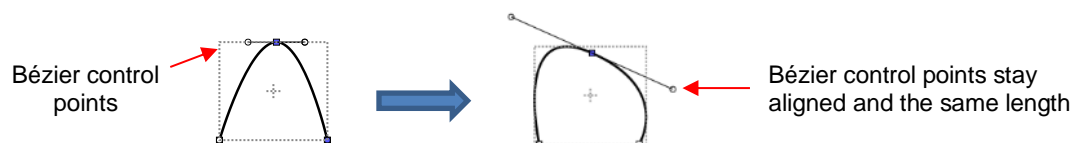
- The left side Bézier control point controls the curve on the left side. Thus, if it had been moved instead this would have resulted:



- ◇  **Symmetric Nodes:** In this mode the Bézier control points not only stay in a straight line, they also stay the same length. As with **Smooth Nodes**, when you convert to **Symmetric Nodes**, the shape immediately forms a curve:



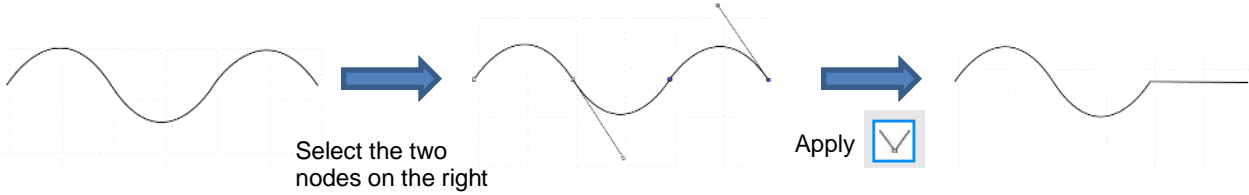
- When the newly formed shape is selected again, the Bézier control points appear in a straight line and the image appears the same as with **Smooth Node** status. However, when you now move one control point, the other will not only maintain that straight line, but also the same length. And the curves on both sides of the selected node will change:



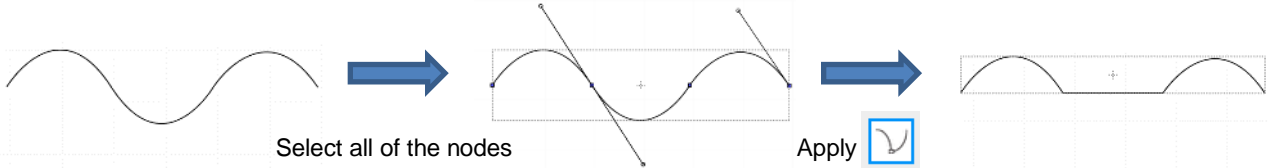
- To further illustrate these options, marquee-select a group of nodes to select more than one path and then click on whichever option you want to apply. The following examples show what occurs when the first two options are applied to curves and the last two options are applied to straight lines:



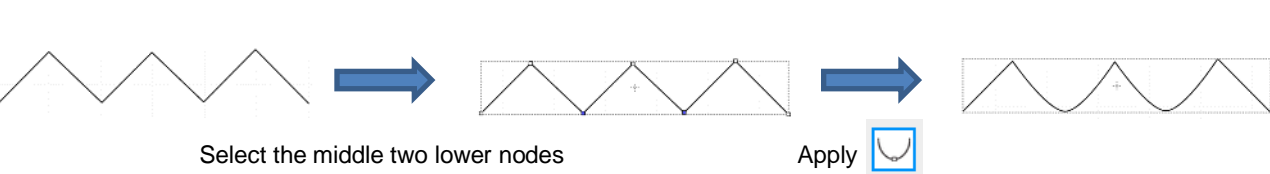
### Convert Node to Corner:



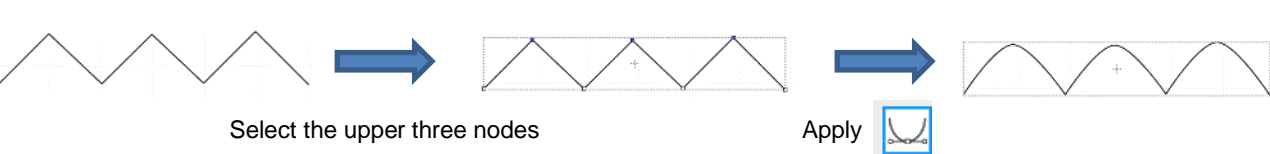
### Convert Node to Cusp:



### Convert Node to Smooth:

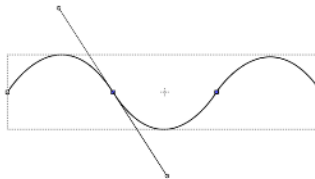


### Convert Node to Symmetric:

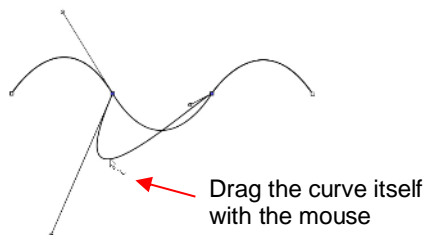


- As was previously shown, you can also drag the path itself to restore it, if one of the nodes has been converted to **Cusp**, **Smooth**, or **Symmetric**. For example:

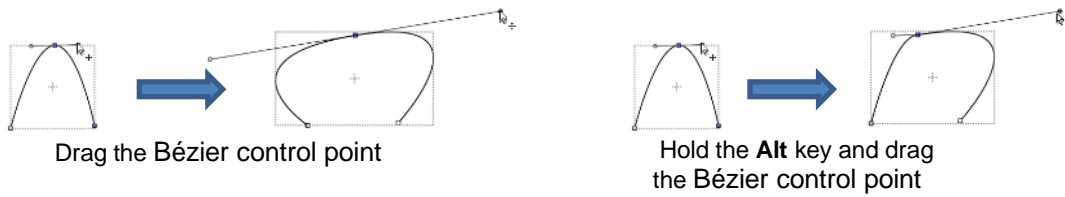
- ◇ The following curve has the lower path selected and the option marked:



- ◇ The path can now be dragged with the mouse:




- You will recall that when a node is in either **Smooth** or **Symmetric** mode, adjusting one Bézier control point will automatically affect the other one and the curves on either side will change. To avoid this, hold the **Alt** key while dragging the control point and the other control point will remain in place:
  - For example, with the following **Smooth** node shape, the same change is made with and without holding the **Alt** key during the adjustment:

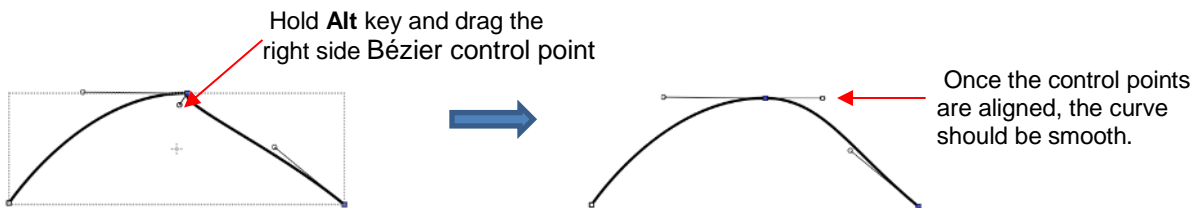



### Examples of Smoothing Curves

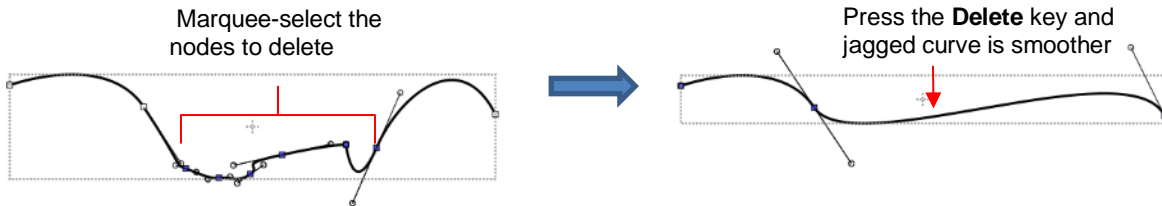
- The last method shown in the prior section can be used to correct kinks in what should be a smooth curve.
  - For example, let's say you want to make the following shape have a nice smooth curve:



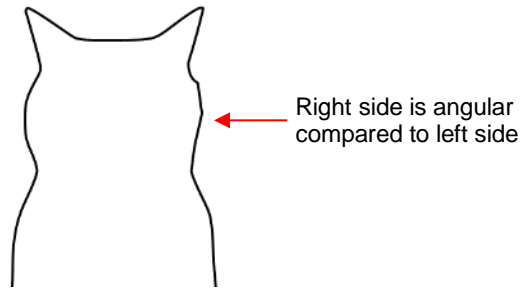
- Using the **Shape Tool**, click on the curve to reveal the node. Then click on the third icon , if needed, so that option will be highlighted. Hold the **Alt** key and drag the Bézier control point that's closest to the curve needing adjustment until the two control points are in a straight line:



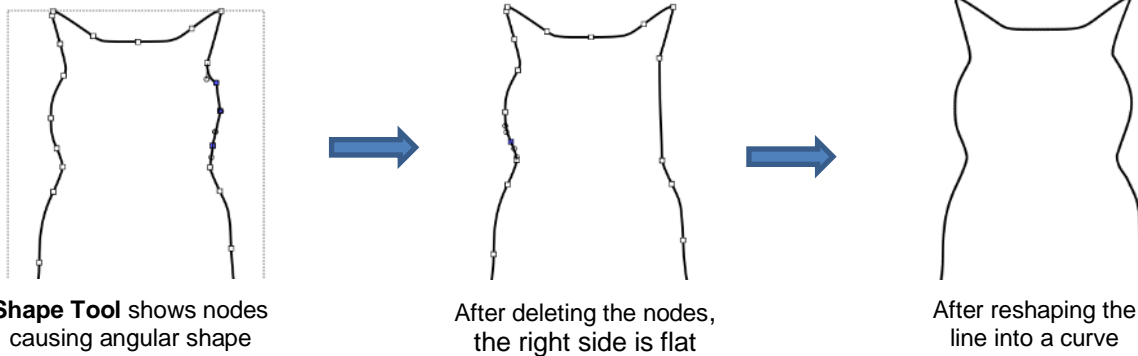
- In *Section 5.04.1*, you were shown how to add or delete nodes while in the **Draw Tool**  mode. Any time you want to add nodes to an existing path, you will need to be in this mode. However, you can delete nodes while in the **Shape Tool** mode. Select a node or marquee-select a group of nodes and press the **Delete** key on your keyboard:



- Based on such a drastic change, it's worth noting that deleting smaller numbers of nodes at a time is usually advisable to avoid losing the original structure of the shape.
  - As a practical example, here is a traced image of a cat. Note the right side of the cat's head is not smooth and rounded like the left side:



- Using the **Shape Tool**, the nodes causing the angular shape are marquee-selected and deleted. Then the path is restored:



### Applications for the Shape Tool

- It's not always obvious when the **Shape Tool** might be needed. Here are a few examples to keep in mind:
  - ◇ Editing of pixel traced images: Sometimes a pixel trace will appear to be perfect until, for example, you use it for a print and cut and discover that some of the paths are slightly outside the printed areas of the original image:



- ◇ Manual tracing: One of the quickest ways to manually trace a raster image is to use the **Draw Tool** and simply click/click/click around the image and then use the **Shape Tool** to create curves and move nodes to more closely align with the original image.
- ◇ Improving a cut: If you have problems with a particular location on a cut shape, examine the nodes in that location. You may find a cluster of nodes or a sharp cusp. Delete those excess nodes, reform the path, and then retest the cut.
- ◇ Modifying poorly designed files: Sometimes you will pick up free files that don't quite cut the way you expected. Examples are often fold-up templates where corners and fold lines do not quite meet. Having the ability to move paths and nodes can correct these kinds of files and provide cleaner and more professional end products.