

WIN32TRACE USER'S GUIDE

Win32Trace © is a program for converting raster (bitmap) images into vector images. These vector images can then be easily rescaled and are useful in many applications. For example, some auto-digitizing embroidery programs require vector graphics for easily filling regions with prescribed stitch patterns.

Win32Trace is actually a Windows® user interface (UI) built around the AutoTrace© tracing program. The UI that Win32Trace provides allows you to:

- Easily import a variety of raster graphics images, included JPG, BMP (bitmap), GIF, TIF, ICO, PSD, and PNG formats.
- View both the original bitmap image and the vector image as you vary settings to optimize the vector graphic.
- Manipulate color and curve renderings to modify the quality and size of the vector graphic produced.
- Save the vector image in a variety of vector formats, such as EMF (enhanced metafile), WMF, EPS, AI, CGM, PLT, DXF, SVG, and PDF.

The final vector graphics file produced by Win32Trace can be used as input to many programs requiring one of the numerous output formats listed above.

Getting Started

To begin using Win32Trace, you must import (Open) a raster file from your hard drive or paste one from the clipboard. Use the **File/Open** menu to select a file to open. In Figure 1, the disk bitmap file “Astro.bmp” was opened and displayed (top image). The original raster file size for this image was 193kB, as shown below the “Input File” box at the top of the Win32Trace workspace. To use the **Edit/Paste** feature, you must first *Copy* a graphic image to the clipboard from another program (like MS WORD© or POWERPOINT©).

This file was converted to vector format by pressing the **Vectorize** button, using the default settings. The default vector output file is always an emf file, but when you save the file (**File/Save As** menu), you will be able to select from any of the allowable vector formats indicated above. In this case, the

vector file is 18kB, as indicated below the “Output File” box, and consists of 77 vectors (as shown to the right of the **Vectorize** button).

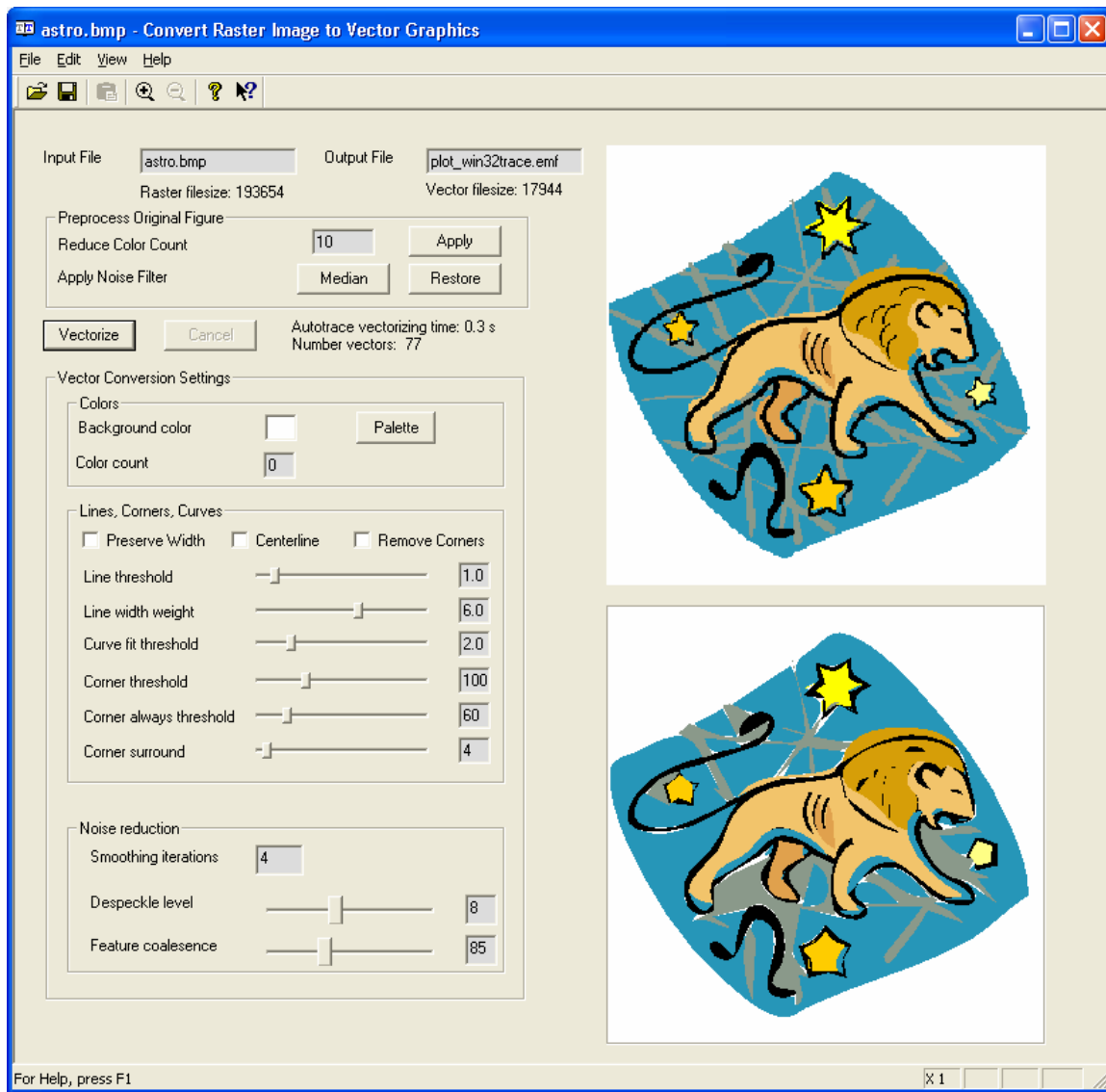


Figure 1: The Win32Trace Screen after loading a bitmap file called “Astro.bmp”

Using Win32Trace Settings to Improve Quality and Reduce Vector Image Size

The remaining user-selectable options in the Win32Trace provide controls which affect the size and quality of the vector image. Probably the two most

important controls are the **Noise reduction** controls at the bottom of the workspace. Use the **Despeckle level** and the **Feature coalescence** to smooth out features and change the size and quality of the vector image. You probably need to experiment with these levels for each image to get values that are optimal for you application. After adjusting one or the other of these levels, press the **Vectorize** button to view the effects of the new level settings. Continue to interactively change these settings until you have achieved the desired quality and size of the vector image.

The on-line help manual (**Help/Help Manual** menu item) can be activated and remains open for consultation during the Win32Trace work session. The contents of that manual are repeated below and provide a succinct explanation of the control knobs available for altering certain properties of the vector image.

Background color

Set this to the color of the background that should be ignored.

Centerline

Trace a character's (or pattern's) centerline, rather than its outline.

Color Count

This sets the number of colors that the output file will contain. Maximum allowable is 256 (which is a lot). Setting this to 0 will perform no color reduction.

With vector graphics, the final file size is related to the image complexity. The greater the number of colors, the larger the file size will be because more color primitives (vectors) will be needed.

For best results, use the smallest number of colors that produce a satisfying vector image. For monochrome images, use color count = 2. For grayscale image, use color count = 0.

Corner Always Threshold

This setting (angle in degrees) forces a pixel to be marked as a corner even if it is right next to another pixel marked as a corner. Default is 60.

Corner Surround

This is the number of pixels on either side of a point to consider when determining if that point is a corner. The default is 4.

Corner Threshold

This setting (angle in degrees) determines if a pixel is marked as a corner. If a pixel, its predecessor(s), and its successor(s) meet at an angle smaller than this, it is marked as a corner. Default is 100.

Despeckle Level

This sets the degree to which Autotrace blurs regions with similar colors when searching for edges. Too little despeckling will cause your image to have wiggly vectors caused by discrete pixels; too much and your image may turn out looking blurred beyond recognition.

Error Threshold

This setting controls the subdivision of fitted curves. To achieve a closer approximation to the original curve, use lower values for this. Pixels that depart by more pixels than this from the original curve will force subdivision of the spline. Default is 2.0.

Filter Iterations

This sets the number of times curves will be smoothed before fitting to a spline. Default is 4.

Line Reversion Threshold

The line reversion threshold attempts to do the same thing as Line Threshold: reduce nearly-straight spline curves to simpler lines. But whereas Line Threshold simply judges the distance between the curve and its straight line, Line Reversion Threshold weights this measurement by the length of the spline. Default is 0.01.

Line Threshold

If the spline curve approximation for a vector is not more than this distance (in pixel units) away from the straight line defined by its endpoints, then the curve will be simplified to a straight line. Default is 1.

Preserve Width

This setting preserves the width of lines when using the Centerline option. The default is to thin them.

Remove Adjacent Corners

Remove corners that are next to each other.

Tangent Surround

The number of points on either side of a point used to compute the tangent vector at that point. Default is 3.

Trace Center Lines

When this option is selected, the workflow traces region centerlines rather than the regions themselves. This is generally not useful for image transformation, but is however sometimes helpful when looking for text within an image

Width Weight Factor

This setting influences the extent to which line width influences the vectorization when deciding which line segments to join together.