Toon Boom Harmony 14.0
Utilities Guide

Legal Notices

Toon Boom Animation Inc.
4200 Saint-Laurent, Suite 1020
Montreal, Quebec, Canada
H2W 2R2

Tel: +1 514 278 8666
Fax: +1 514 278 2666

toonboom.com

Disclaimer

The content of this guide is covered by a specific limited warranty and exclusions and limit of liability under the applicable License Agreement as supplemented by the special terms and conditions for Adobe®Flash® File Format (SWF). For details, refer to the License Agreement and to those special terms and conditions.

The content of this guide is the property of Toon Boom Animation Inc. and is copyrighted.

Any reproduction in whole or in part is strictly prohibited.

Trademarks

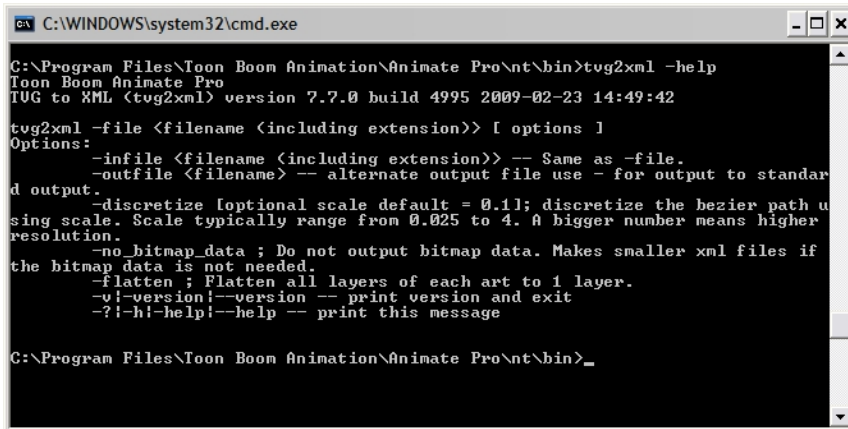Harmony is a trademark of Toon Boom Animation Inc.

Publication Date

9/12/2019

Contents

Chapter 1: Introduction to Utilities

Toon Boom provides utilities that you can use in a Command Prompt and Shell to provide more flexibility and control over the different command options in Toon Boom Harmony.

Running a Utility

Toon Boom includes a number of command line utilities that you can use to convert image formats, bitmap or vector, into other image formats.
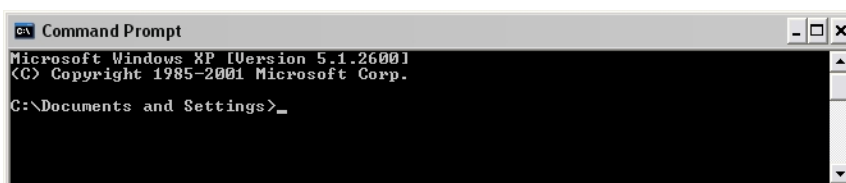
These command line utilities are found in your Toon Boom application folder.

- **Windows:** \Program Files(x86)\Toon Boom Animation\Toon Boom Harmony 14.0 [edition]\win[x]\bin
- **Mac OS X**: /Applications/Toon Boom Harmony 14.0 [edition]/tba/macosx/bin
- **Linux:** /usr/local/ToonBoomAnimation/harmony_14/lnx86_64/bin

To run these utilities, use a Command Prompt or Terminal window. All of these utilities work on input files that are processed using options you specify to produce an output.

How to run a command line utility

1. Open a Command Prompt (Windows) or Terminal (Mac OS X) window or a Console (Linux) window.

   ‣ **Windows**: From the Start menu, select **Programs > Accessories > Command Prompt**.
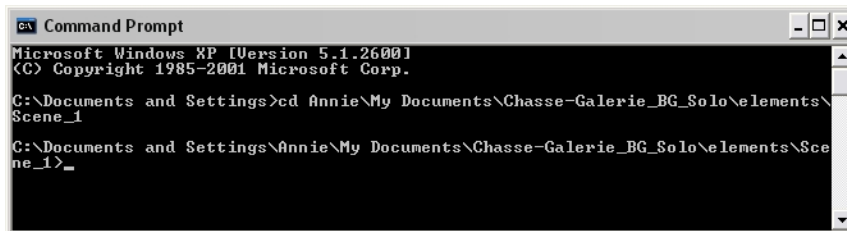
   ‣ **Linux**: Select **Menu > System Tools > Terminal**.
   ‣ **Mac OS X**: Open a **Finder** window and select **Applications > Utilities > Terminal**

2. In the Command Prompt or Terminal window, switch to the directory that contains the image files you want to process (elements folder).
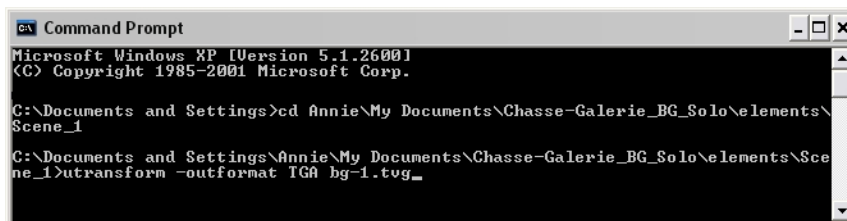
3. Type the name of the utility you want to launch, and the options and name of the file you want to process. The options must be preceded by a dash (-).

Here is an example of how to launch **utransform** using Windows:

‣ **utransform -outformat TGA bg-1.tvg**

Here is an example of how to launch **utransform** using Mac OS X:
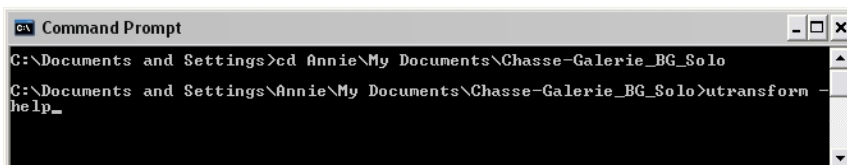
‣ **utransform -outformat TGA bg-1.tvg**

> **NOTE:** If another version of Toon Boom Harmony is still installed on the system, start the utility application from the \bin folder. This will ensure that the correct version of the utility is used.

‣ **Windows**: `\Program Files\Toon Boom Harmony 14.0 [edition]\nt\bin>./utransform -outformat`
‣ **Mac OS X**: `Applications/Toon Boom Harmony 14.0 [edition]/tba/macosx/bin>./utransform -outformat`
‣ **Linux**: `/usr/local/ToonBoomAnimation/harmony_14/lnx86/bin>./`**utransform -outformat**

4. For help with the options and syntax of the utilities, open the help. To do this, type **-help** after the name of the utility on the command line.

‣ Type: **utransform -help**

Chapter 2: Utilities

This chapter describes all of the utilities, options and their uses.

Pdfimport Utility

The Pdfimport utility is used to import a .PDF or an .AI file as a template without going through the interface. It allows more control and option flexibility over the imported file.

Here is the format you must follow when using Pdfimport:

```
Pdfimport [options] pdf or ai files
```

The available Pdfimport options are:

Command	Action
-outdir output_folder	This option defines the folder where the output files will be saved. The defined path is not relative.
-outtemplate output_folder.tpl	This option defines the template name for the converted pages. The defined path can be relative.
-PDF_SUPPORT_CMYK	This option will automatically convert CMYK colours to RGB. Otherwise, CMYK colours would import as a red colour.
-PDF_SEPARATE_LAYERS	This option will use the Illustrator top level groups as separate drawing names.
-PDF_FLATTEN	Use this option to perform a flatten on each drawings while importing.
Description of Switches	
-outtemplate output_folder.tpl	Output template name for converted pages.
-outdir dir	This option defines the output folder for the templates (the defined folder must already exists.)

-usage	This option will display the usage.
-?|-h|-help|--help	This option will display the help information.
-v|-version|--version n	This option will display the version information.

NOTE:

- The **-outdir** and **-outtemplate** options are exclusive; they cannot be used together.

- You can only specify one file with the **outtemplate** option.

- If the CMYK colours option is not enabled, the application will output the following error message:
  CMYK: Unsupported colorSpace

- Pdfimport does not overwrite existing templates, but will overwrite files in **outdir**.

Pix2vec Utility

The Pix2vec program converts bitmap files, which can be generated during the scanning process, to Toonboom Vector Graphic (TVG) files. TVG is the vector file format for Toon Boom professional software.

You can vectorize SCAN and other bitmap files by running Pix2vec from the command line. There are a number of options you can use. To see a list of the vectorization options, type **pix2vec --help or pix2vec -?**.

Here is the format you must follow when using Pix2vec:

$ Pix2vec -file [file name, including extension] [options]

Here are the available Pix2vec options:

COMMAND	ACTION
FILE IO OPTIONS	
-file <filename (including extension)> [options]	Use this option to define the file you want to perform Pix2vec on.
-infile <filename (including extension)>	This option is the same as -file. Use this option to define the file you want to perform Pix2vec on.
-outfile <filename>	Use this option to rename the output file.
-informat <format>	This option defines the input format. Used if reading from standard input.
-debug	Use this option to turn on the debug mode.
-version	This option will display the version information.
-output_version [version]	This option defines the output files of this version. Valid versions can be: 0 or 604. The TVG format version is 604.
-noforce	This option will prevent the output image from being forced if the image is inconsistent.
REGISTRATION OPTIONS	

COMMAND	ACTION
-register	Use this option to perform optical registration. Follow this format: <dpi side strictness>; The Side position can be left, right, top, bottom or l, r, t, b. The Strictness can be either loose, strict or l, s.
-registration_looseness_factor <factor>	Registration looseness factor (by default the looseness factor is 2.0). This is used for optical registration only and is calculated mathematically by the system.
-rlf	This option is the short hand equivalent of the registration_looseness_factor function.
-rdebug	This option output registration debug messages
-pegpitch <inch (default 8.000000)>	Use this option to customize the value of the distance between the registration marks.
-threshr < (default 0.500000)>	Use this option to set the threshold value for optical registration. You can set the value in the range of 0.0 to 1.0.
-rmargin <inch (default 1)>	Use this option to define the size of the region where registration marks can be detected.
-peg_distance_from_center <inch (default 5.25)>	Use this option to determine the distance between the centre of your page to the peg registration marks.
-pdfc	This function is the short equivalent of peg_distance_from_centre. Use this option to determine the distance between the centre of your page to the peg registration marks.
-out_peg_position <side (default same)>	This option defines the wanted position of the peg on the drawing. The position can be right, left, top, bottom, r, l, t, b or same. A rotation will be performed if this position is different from the side passed to -register.
-output_peg_matrix	This option outputs the peg transformation matrix on standard output.
-scanner_calibrate < (default 1.0000 1.0000) >	This option sets the x and y scale factors to be applied to scanner image.
FILTERING OPTIONS	
-pixel <pixel_shape (default '4x3')>	The valid value is: 4x3.

COMMAND	ACTION
-gap <worldUnits (default 10)>	Use this option to set the size of gaps that will be automatically closed.
-pencil	Use this option to generate line art only.
-keep_dirt	Use this option to not filter dirt.
-thresh <threshold (default 0.2)>	Use this option to set the threshold value.
-rmv_hairs <worldUnits (default 1)> <passes (default 1)>	Use this option to remove hair smaller than the defined size in a specific number of passes.
-rmv_holes <area (default 7)>	Use this option to remove holes smaller than the defined area size.
-rmv_dirt <area (default 1)>	This option will remove dirt smaller than the defined size. You can set values in the range of 100 to 500. The size, or area, is in world units squared.
-rmv_triangles <worldUnits (default 30.000000)>	Use this option to remove triangles at the defined pixel distance from each other. You can use -no_break to remove all triangles.
-no_texture	This option prevents textured strokes to be generated.
-color_as_texture	This option will vectorize the alpha channel and put the RGB colour in a textured colour.
-noclosegap	This option will prevent gaps from being automatically closed.
-no_break	This option disables the breaking of line art.
-jag_filter <pixels (default 0>	This option will expand the pixels in the vectorization bitmap to give a jagged line a more straight and smooth result. This makes use of the -expand_bitmap option to expand the line by 1 or 2 pixels and then contract it by the same amount, removing any jaggedness from the line in the process.
-expand_bitmap <pixels (default 0>	This option expand the pixels in the vectorization bitmap. This is used to thicken the line.
-fit_errorc <error (default 1.000000>	This option defines the fit error for the colour art. A fit error occurs when there are three points on a curved or angled line and the system misses the middle point. For example, instead of a the line going from point 1 up to point 2 and then down to point 3, to form a curve or angled line, it goes from point 1 to point 3 missing point 2 and creating a straight line. Using the -fit_error option eliminates this error.

COMMAND	ACTION
-fit_errorl <error (default 1.000000>	This option defines the fit error for the line art. A fit error occurs when there are three points on a curved or angled line and the system misses the middle point. For example, instead of a the line going from point 1 up to point 2 and then down to point 3, to form a curve or angled line, it goes from point 1 to point 3 missing point 2 and creating a straight line. Using the -fit_error option eliminates this error.
-smoothl <passes (default 1>	This option defines the number of smooth passes for the line art.
-smoothc <passes (default 1>	This option defines the number of smooth passes for the colour art.
-first_smooth <passes (default 0>	This option defines the number of smooth passes on the line art before breaking triangles.
-first_smoothl <passes (default 0>	This option defines the number of smooth passes for line art before breaking triangles.
-first_smoothc <passes (default 0>	This option defines the number of smooth passes to perform. For line art in colour art pass (needs -2pass).
-2pass	This option specify 2 sets of parameters; one for line art "l", one for colour art "c"(-thresh, -rmv_holes and -rmv_dirt will be overridden by -threshl, -threshc, -rmv_holesl, -rmv_holesc, -rmv_dirtl and -rmv_dirtc).
-threshl <threshold for line art (default 0.5)>	This option sets the threshold value for the line art. Range can be from 0.0 to 1.0.
-threshc <threshold for color art (default 0.5)>	This option sets the threshold value for the colour art. Range can be from 0.0 to 1.0.
-jag_filterl <pixels (default 0>	This option expands the pixels in the vectorization bitmap for line art. To smooth and straighten jagged lines.
-jag_filterc <pixels (default 0>	This option expands the pixels in the vectorization bitmap for colour art. To smooth and straighten jagged lines.
-expand_bitmapl <pixels (default 0>	This option expands the pixels in the vectorization bitmap for line art.
-expand_bitmapc <pixels (default 0>	This option expands the pixels in the vectorization bitmap for colour art.
-rmv_holesl <area (default 7)>	This option removes line art holes smaller than the specified area.

COMMAND	ACTION
-rmv_holesc <area (default 7)>	This option removes colour art holes smaller than the specified area.
-rmv_dirtl <area (default 1)>	This option will remove dirt on the line art that is smaller than the defined size. You can set values in the range of 100 to 500. The size, or area, is in world units squared.
-rmv_dirtc <area (default 1)>	This option removes dirt on the colour art that is smaller than the defined size. You can set values in the range of 100 to 500. The size, or area, is in world units squared.
-margins <inch (default 0.25)>	This option removes the margin around bitmap.You must define the size of the margin in inches.
-top_margin <inch (default 0.25)>	This option removes the top margin of bitmap. You must define the size of the margin in inches.
-bottom_margin <inch (default 0.25)>	This option removes the bottom margin of bitmap. You must define the size of the margin in inches.
-left_margin <inch (default 0.25)>	This option removes the left margin of bitmap. You must define the size of the margin in inches.
-right_margin <inch (default 0.25)>	This option removes the right margin of bitmap. You must define the size of the margin in inches.
-remove_peg_bars	This option removes the registration marks.
-field_size <fields (default 12 or use value in scan file)>	This option sets the drawing to this field size.
-fs	This is the abbreviated version of -field_size function. Use this option to set the drawing field size.
-peg_bar_size <inch (default 1)>	This option sets the size of the peg bar region.
-noframe	This option prevents a frame being added around the colour art.
-frame_fields <default -1.000000>	This option will put a frame of the specified dimension around the colour art.
-downscale_input <default 1> t	This option downscales the raw input by this integer factor.
-downscale_texture <default 1>	This option downscales the output texture by this integer factor.
-buildmatte	This option will automatically generate a matte on the underlay layer for quick line test.
-buildmatte_colourart	This option will automatically generate a matte on the colour art layer for quick line test.

COMMAND	ACTION
-copystrokes	This option will copy the original strokes when building the matte. Note that -buildmatte and -buildmatte_colourart are mutually exclusive.
Options for bitmap that have no registration information	
-pixel_margins <inch (default 0)>	This option sets the size in inches for the bitmap margin.
-top_pixel_margin <inch (default 0)>	This option sets the size value in inches for the bitmap top margin.
-bottom_pixel_margin <inch (default 0)>	This option sets the size value in inches for the bitmap bottom margin.
-left_pixel_margin <inch (default 0)>	This option sets the size value in inches for the bitmap left margin.
-right_pixel_margin <inch (default 0)>	This option sets the size value in inches for the bitmap right margin.
-dpi <(default -1)>	This option defines the dpi information of input bitmap.
RGB KEYING OPTIONS	
-rgb	Use this option to generate separate zones for red green and blue lines.
-rgb_alpha <value (default 255)>	Use this option to set an alpha value for red, green and blue colours.
-no_red	Use this option to ignore the colour red during vectorization.
-no_green	Use this option to ignore the colour green during vectorization.
-no_blue	Use this option to ignore the colour blue during vectorization.
-flatten	Use this option to perform a flatten on the drawing after generating the colours.
-rmv_rgb_dirt <threshold area default 0.0>	Use this option to remove red, green and blue regions smaller than the specified area.
-expand_bitmap_rgb <pixels (default 0>	This option expands the pixels in the vectorization bitmap for rgb.
-threshrgb <value> <threshold for rgb vectorization default 0.200000>	This option defines the thresholds on rgb vectorization and value to consider a pixel to be gray.
-threshsv <saturation threshold default 0.500000> <value threshold default 0.500000>	This option defines the thresholds on saturation and value to consider a pixel to be gray.
COLOUR VECTORIZATION OPTIONS	Note that the following colour vectorization

COMMAND	ACTION
	options are experimental.
-color_vectorize	Use this option to perform a colour vectorization.
-file2 <color art filename>	This option specifies the colour art bitmap file to perform vectorization on.
-penstyle <center alpha (0.0-20.0)> <edge alpha (0.0-20.0)> <gamma (0-10)> <centre pressure effect (0.0-1.0)> <edge pressure effect (0.0-1.0)><texture bitmap downscaling (0.2-20)> <texture bitmap file (valid filename or "" if no file)>	Use this option to generate and set a brush texture for the line art.
-pressure_variation <strategy (0, 1 or 2)> <min pressure (0.0-1.0)> <max pressure (0.0-1.0)> <max variation (0.0-1.0)>	This option specifies a pressure strategy for the centre line.
-blur_radius <pixels (default 0)>	This option blurs the generated brush texture.
-color_contour_smooth_passes <times (default 3)>	This option sets the performed number of smooth passed on contour before computing texture.
-ccsp <times (default 3)>	This is the abbreviated version of the -color_contour_smooth_passes function. This option sets the performed number of smooth passed on contour before computing texture.
-color_rmv_holesl <world units (default 0.000000)>	This option sets the size of holes to be removed when computing texture.
-color_fill_holesl <world units (default 0.000000)>	This option will automatically fill holes of the selected size on the colour art layer.
BUBBLE USAGE (implemented only for colour vectorization's line art)	To learn more about the Bubble command, refer to the How to Vectorize With Bubbles section.
-create_bubbles	This option modifies the original line art of a drawing by randomly inserting bubble shapes in it.
-bubble_gap <value (default 3)>	This option defines the maximum number of colour art points between two consecutive bubbles.
-bubble_length <value (default 10)>	This option defines the maximum number of different radius circles in a single bubble.
-min_radius <value (default 1.5000)>	This option defines the minimum radius of a circle in a bubble relative to the line thickness (must be >= 1.0).
-max_radius <value (default 3.5000)>	This option defines the maximum radius of a circle in a bubble relative to the line thickness (must be >= 1.0).
-uniform_gap	This option specifies that the bubbles should be placed at equal distance from each other.

COMMAND	ACTION
-uniform_height	This option forces the height of the bubbles to be the same for all bubbles.

Vectorization

The options that are used during the vectorization process are based on vectorization styles. You can select a preset from a list, or customize your own.

Some of the commonly used vectorization styles displayed in the Custom Vectorization Parameters, and the Import Drawings dialog boxes, use parameters similar to the following examples:

- Black and White

- Tones/highlights (B+W notriangles)

- Greyscale Rougher Lines

- Greyscale Soft Edge

Black and White

Use this style to vectorize black and white (1-bit) SCAN, or any other black and white files. Black and white 1-bit files include no texture information.

```
options: -no_texture -rmv_holes 7 -rmv_dirt 10 -fit_errorl 2.0 -fit_
errorc 2.0
```

When you vectorize black and white drawings with these options, the vector files will contain no texture (`-no_texture`); all lines will be solid.

These options also remove holes, (`-rmv_holes 7`) and dirt, (`-rmv_dirt 10`) of specific sizes.

The `fit_errorl` and `fit_errorc` options also filter the contours that form ink lines and colour art so that they are smoother.
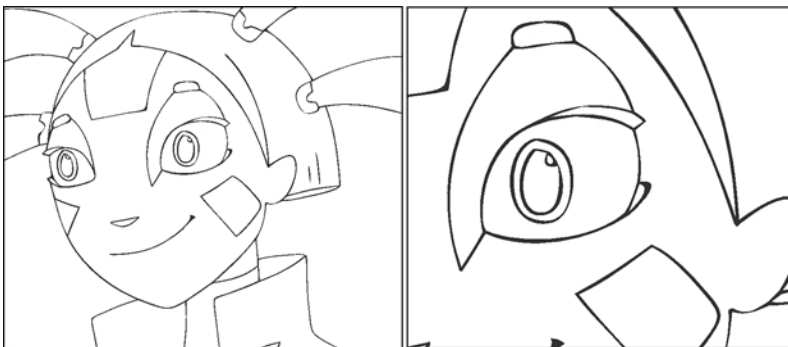
Tones/highlights (B+W notriangles)
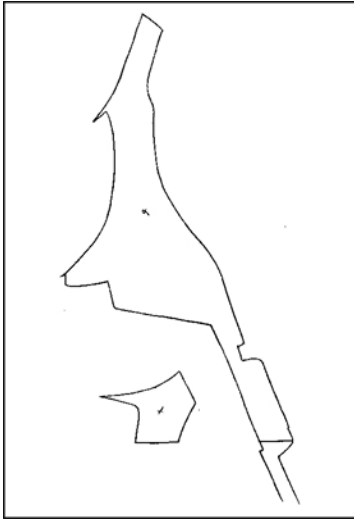
This style vectorizes black and white 1-bit files that will be used as mattes to build tone and highlight effects.

```
options: -no_texture -rmv_holes 7 -rmv_dirt 10 -fit_errorl 2.0 -fit_
errorc 2.0 -no_break
```

These options prohibit the creation of line textures, remove holes and dirt, and smooth final drawings. These options also remove triangles (`-no_break`) at the intersection of lines in the line art.

Triangles are useful at intersections if the intersecting lines are to be painted using different colours. This is unnecessary in drawings, like mattes, that will be painted a solid colour.

Greyscale rougher lines

This style vectorizes greyscale drawings, maintaining the rough textures in the lines.

```
options: -2pass -threshl 0.1 -threshc 0.2 -rmv_holesl 7 -rmv_holesc 7
-rmv_dirtl 10 -rmv_dirtc 10 -expand_bitmap 0 -fit_errorc 3.0 -fit_
errorl 3.0 -jag_filterc 1 -rmv_hairs 30 3 -rmv_triangles 90
```

As you can see in the example below, the drawing gets its character from the roughness of its lines. You would not want to lose the distinctness of the line during the vectorization process.
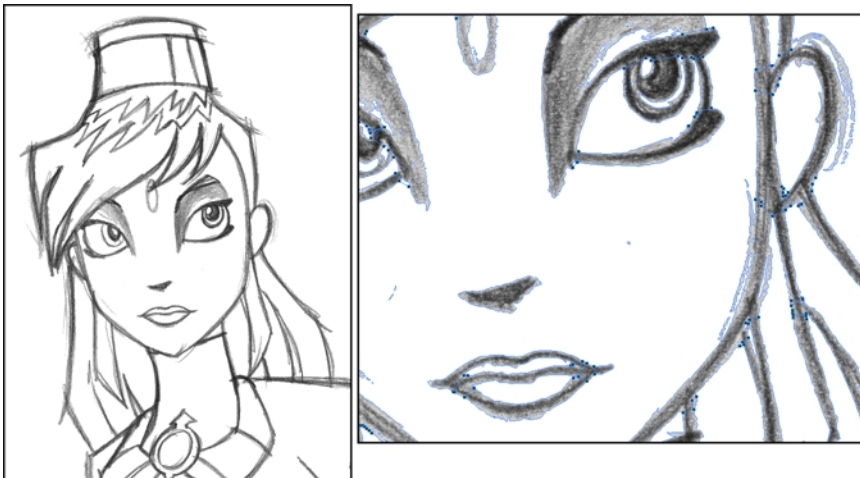
The options in this style force two passes of the vectorization process to apply different values to the line art and colour art (`-2pass`). You must specify values for the line art and colour art when you use this option.

For drawings with specific vector-style lines or mattes, you only need one pass. For greyscale drawings, you may want to pass through the vectorization process twice to apply different values to the line art and colour art.

The colour art (`-threshc`) and line art (`-threshl`) thresholds determine what values in the scanned image will be considered as part of the drawing, and what will be ignored and eliminated in the vectorized drawing. Zero (0) is white and one (1) is black. The threshold is between these two values.

The `expand_bitmap` and `jag_filter` options work together so that you can pick up noise, or small pencil lines and marks, during the vectorization process. The `expand_bitmap` option expands the bitmap to pick up the noise. When used with `jag_filter`, the bitmap is shrunk down by the value of the option. You use these two options together to maintain the size of your line art.

The `fit_error` options smooth ink lines and colour art strokes.

The `rmv_holes` and `rmv_dirt` options remove hair and dirt of a specific size from the line art and colour art. The `rmv_hairs` option removes tiny strokes that extend from main colour art strokes. And, `rmv_triangles` option removes triangles and intersections that are less than the specified distance apart.

Greyscale soft edge

Use this vectorize style when you want to create a vector image with fine, textured strokes. Unlike the Grayscale rougher lines style, this style is meant for more subtle line variations.

```
style_name: Grayscale soft edge

options: -2pass -threshl 0.05 -threshc 0.05 -rmv_holesl 7 -rmv_holesc 7
-rmv_dirtl 10 -rmv_dirtc 10 -fit_errorl 2.0 -fit_errorc 2.0 -expand_
bitmapl 1
```

Compare these options to the Grayscale rougher lines style. You will notice that the `-thresh` values are smaller; therefore, fewer pixels will be filtered out. This contributes to the fluffier appearance of the lines. You will also notice that the `fit_error` value is smaller and the `-expand_bitmap` value is larger. All of these options contribute to the smoother appearance of the final line.
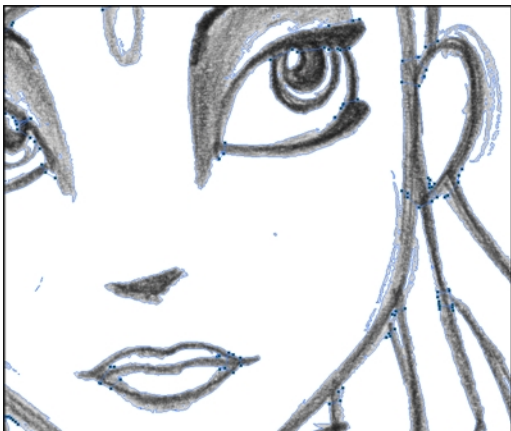

How to Vectorize With Bubbles

Vectorizing with bubbles allows the user to modify the original LineArt of a drawing by randomly inserting bubble shapes.

The command inserts bubbles starts from the circle with the smallest radius (min_radius), with the centre on one colour art point. The command then adds subsequent circles on the remaining colour art points, increasing their radius each time. The command adds new circles in ascending order of radius until the bubbles reach the maximum size specified by the max_radius parameter.

The command inserts the first and last circle at the minimum radius (specified by the min_radius parameter) and randomly assigns the height of the middle circle based on the bubble_length parameter.

For each bubble that appears, the command selects a random number of colour art points to set the distance between bubbles. The bubble_gap specifies the maximum number of such points, with the minimum being zero.
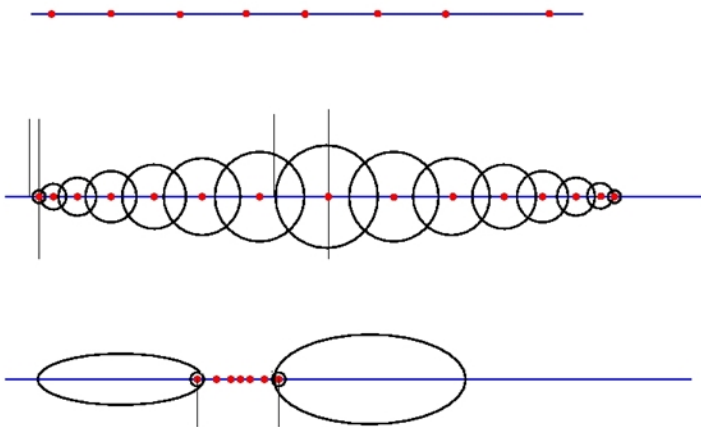
Examples

Drawing With Uniform Line Thickness

The initial drawing has a uniform thickness. Use it to view and compare the results of the following bubbles options.

- **Example 1**

The drawing has been vectorized using the command options:

```
-create_bubbles -bubble_gap 3 -bubble_length 16 -max_radius
```


- **Example 2**

    The drawing has been vectorized using the command options:

    ```
    -create_bubbles -bubble_gap 3 -bubble_length 4 -max_radius 3.5
    ```


- **Example 3**

The drawing has been vectorized using the command options:

```
-create_bubbles -bubble_gap 3 -bubble_length 16 -max_radius 3.5
```


- **Example 4**

The drawing has been vectorized using the options:

```
-create_bubbles -bubble_gap 3 -bubble_length 4 -max_radius 3.0 -
uniform_gap -uniform_height
```

Swf2tvg Utility

The Swf2tvg utility is used to import an SWF file into your scene without using the interface. This will create a .tvg file for each frame. Use the different commands to control the options.

Here is the format you must follow when using Swf2tvg:

```
Swf2Tvg -palette <palette_file> -usage -help -use_different_palettes
-base_name <base_out_name> -outdir <output directory> -bbox_recenter
-ignore_position -start_index <number> file1 [file2] [file3]
```

Here are the available Swf2tvg options:

COMMAND	ACTION
DESCRIPTION OF SWITCHES	
-palette <palette_file>	This option is used to add the colours of the SWF file to the palette file and save it.
-use_different_palettes	This option is used to create a new palette for each SWF file and **DOES NOT** save any palette.
-base_name <name>	Use this option to automatically rename all generated drawings name-x.tvg where x is an increasing index.
-start_index <index>	Use this option to define the starting index to name the drawings. The default value is 1.
-outdir <dir>	Use this option to define the output directory for all generated drawings.
-use_place_objects	This option will transform and position the imported drawings following the position on the stage in the Flash project. This option uses the information that is contained in the SWF PLACE_OBJECT record. Note: this option does not use -start_index.
-frame_alias <list>	This option uses the comma separated list of names to generate timing information. This is mainly to convert models. e.g. -frame_alias FR_%.2d,3Q_%.2d,BK_%.2d"
-base_color_index <index>	Use this option to base the colour index in higher 32 bits.
-bbox_recenter	This option centres drawings according to their bounding box. This option implies -ignore_position.
-ignore_position	Use this option to ignore all sceneplanning information.
-usage	This option will display the usage.
-?|-h|-help|--help	This option will display the help information.
-v|-version|--version	This option will display the version information.

> **NOTE:**
> - If -outdir is not specified, the files will be written in the SWF file current directory.
> - You can specify any SWF file or PLT file. The PLT files will be read and used to match colours but will not be modified. The only palette modified is the palette specified by the -palette switch.

Swfimport Utility

The Swfimport utility is used to create a template from a SWF file.

Here is the format you must follow when using Swfimport:

SwfImport [options] swf_files

Here are the available Swfimport options:

COMMAND	ACTION
AVAILABLE OPTIONS	
-outdir output_folder	This option specifies the output folder for the generated templates
-applycolourtransform	This option will apply colour transforms from SWF onto the drawings.
-paletteName name_of_palette	Use this option to specify the name of the palette file to use with colour recovery.
DESCRIPTION OF SWITCHES	
-outdir dir	This option specifies the output folder for the templates (The specified folder must already exist.)
-usage	This option will display the usage.
-?|-h|-help|--help	This option will display the help information.
-v|-version|--version	This option will display the version information.

Swfimport does not overwrite templates.

tvg2xml Utility

The tvg2xml utility is used for debugging purposes; it will convert your TVG files to an XML file format that you can read.

Here is the format you must follow when using tvg2xml:

tvg2xml -file <filename (including extension)> [options]

Here are the available tvg2xml options:

COMMAND	ACTION
OPTIONS	
-infile <filename (including extension)>	Use this option to define the file to perform tvg2xml on.
-outfile <filename>	This option is used to define an alternate output file. Use - for output to standard output.
-discretize [optional scale default = 0.1]	This option discretizes the Bezier path using scale. Scale typically range from 0.025 to 4. A larger number means a higher resolution. NOTE: Discretize is a process where each pixel of an image is converted into the black foreground or the white background. The colours and grays of the original image are lost. By controlling discretizing, unwanted parts of the original image can be removed. This process of converting colour images into black foreground and white background is called discretizing.
-no_bitmap_data	This option will prevent the output of bitmap data. This will produce a smaller XML files if the bitmap data is not needed.
-flatten	This option will perform a flatten on the layers.
-v|-version|--version	This option will display the version information.
-?|-h|-help|--help	This option will display the help information.

uinfo Utility

The uinfo utility is used to display the following information about a specified bitmap file.

- Name

- Resolution

- Format

- Channels

- Bites per Channels

Here is the format you must follow when using uinfo:

```
uinfo program input_files
```

COMMAND	ACTION
AVAILABLE OPTIONS	
-?|-h|-help|--help	This option will display the help information.
-v|-version|--version	This option will display the version information.

utransform Utility

The utransform program converts vector images to pixmaps, and between different pixmap file formats. For example, you can use utransform to convert a TGA to an SGI file. Or, you can convert a TVG file to a Photoshop

PSD file.

Here is the format you must follow when using utransform:

`utransform -outformat [options] [file name, including extension]`

Here are the available utransform options:

COMMAND	ACTION
OPTIONS	
-outformat <format>	This is the file type you want to output with utransform. The following are the file formats supported by utransform: TGA, TGA1, TGA3, TGA4, SGI, SGI1, SGI3, SGI4, SGIDP3, SGIDP4, OMFJPEG, OPT, OPT1, OPT3, OPT4, PSD, PSD1, PSD3, PSD4, PSDDP3, PSDDP4, YUV, PAL, and SCAN.
-outfile <name>	This option is for the file name of the output file. If you are processing multiple files, you will not be able to control their final name. If not specified, the files created by utransform will have the same file name as the original. The only difference will be the file extension.
-crop	Outputs part of a tvg where the lines are. A bitmap of the bounding box around those lines is output as well as an XML file with the position of that bitmap in relation to the Camera view.
-debug	This option will display information on the different steps of the process as well as the messages related to errors that might have occurred.
-?|-h|-help|--help	This option will display the help information.
-v|-version|--version	This option will display the version information.
IMAGE OPTIONS	
-resolution <w> <h>	This option manages vector and pixmap input files. It indicates the height and width of the output file.
-resolution scan	This option will use the.scan info to determine the drawing resolution when unvectorizing from the Control Centre.
-scale <s>	Use this option to scale the height and the width of the output file by the value you enter. The resolution of the image must be able to accommodate the new image size.
-xscale <s>	Use this option to scale the width of the output file. The resolution of the image must be able to accommodate the new image size.
-yscale <s>	Use this option to scale the height of the output file. The resolution of the image must be able to accommodate

COMMAND	ACTION
	the new image size.
-turn <degrees>	Use this option to rotate the output file by the amount of degree entered.
-ps <in> <out>	Use this option to convert the shape of the pixel. This option inputs and outputs pixel shapes for formats other than YUV and PAL. The possible values are: square, NTSC and PAL.
-bgcolor <r> <g> <b>	This option defines the background colour for TVG images. The range is either 0-1 (a percentage of 255) or 0 - 255. The default value is white.
-bgalpha <a>	This is the alpha value of the background. The range is either 0-1 or 0 - 255. The default value is opaque (255).
VECTOR OPTIONS	
-antialiasing <quality><exponent>	quality = low, medium-low, medium or high exponent = between 0-3 This option is for converting vector images to pixmaps. You can specify the quality of the anti-aliasing process (low, medium-low, medium or high) or the exponent (between 0-3).
-nolinetexture	This disables the generation of line textures from TVG files.
-nolineart	Use this option to exclude line art from the output file.
-nocolorart	Use this option to exclude colour art from output file.
-move <x> <y>	Use this option to recentre the output file, output pixels or world units for TVG output Note: Useful values for TVG output might be 714.285000 in x or 535.713750 in y
-flatten	Use this option to flatten the drawing and merge its textures. By default the output file format is TVG.
-bboxtvgincrease	This option will increase the .tvg bonding box size. The default value is 5 (percent).
-normalize	This option normalizes the TVG. This implies that the outformat is TVG. If the TVG has a different scaling than 1, it will scale the coordinates and set the scaling to 1.0.
-setfieldsize <f>	Use this option to set the internal scaling of the TVG to an

COMMAND	ACTION
	exact field size.
VECTOR TO VECTOR OPTIONS	
-centreline	Use this option to extract the centreline of the drawing's line art.
-closegap	Use this option to perform Close gap.
-gaplength	Use this option to define a Close gap length value. The default value is 10.
-hairpasses	Use this option to set the number of pass to perform for the remove hair option. The default value is 2.
-hairlength	Use this option to define the value for the hair length. The default is 20.
-keepcolorart	Use this option to keep the existing colour art and extract the centreline over it.
-showstrokes	Use this option to show the contour of line art and centrelines in special colours.
-thickness	Use this option to define the thickness in pixels of the strokes to show.
-fieldsize <fs>	Use this option to set the field size for PDF output. The default field size is 12.
-lineartstrokescolor <r> <g> <b> <a>	Use this option to define the red, green, blue, alpha values for the line art stroke colour.
-colorartstrokescolor <r> <g> <b> <a>	Use this option to define the red, green, blue, alpha values for the colour art stroke colour.
-nofitcolorart	Use this option if you do NOT want to generate Bezier curves for colour art.
-tvgversion [version]	This option will convert to older/supported vector format product version: v720 = 1005 v710 = 1005 v702 = 1004 (Early version of 7.0.2 were using 1003.) v700 = 1003
ALIGNMENT OPTIONS	
-align <RULE>	Use this option to generate a bitmap that will fit inside Harmony with a read node aligned with a defined rule. RULE can be: AS_IS, CENTER_TB, CENTER_LR, CENTER_FIRST_PAGE_HORIZONTAL, CENTER_FIRST_PAGE_VERTICAL, TOP, BOTTOM, LEFT, RIGHT.

COMMAND	ACTION
-dpi <dpi>	Use this option to define the output resolution for the bitmap image in dots per inch. The default resolution is 75 dpi.
-sar <scene_aspect_ratio>	This option sets the scene aspect ratio, the default is 1.33333. Use 1.7777777 for 16/9 scenes. The scene aspect ratio can be read from the scene alignment dialog. Beware, that this is not the ratio of the scene resolution.

Output a Layout to a Bitmap Format

Once your backgrounds are done in a Toon Boom application, you are ready to paint them. You can paint your backgrounds within the software, or export them to a third-party bitmap software to paint.

There are two techniques for exporting vector black and white backgrounds:

- Render Network

- utransform and Exporting a Panoramic Background

Render Network

To export your background image, you can add a Write node to your network and use the Render Write Node option to export the frame where your background is. The background image will be exported and cropped to the scene resolution.

If you have a panoramic background, use the utransform utility to export your image.

NOTE: Refer to the Toon Boom Harmony User Guide to learn how to render your background from your network.

utransform and Exporting a Panoramic Background

The utransform utility is able to do some format conversions and limited image processing.

By default, the utransform utility will convert the strokes and colour zones that are within the 12 field chart. If you have extra artwork outside of the 12 field, you will have to scale down the drawing using the utransform utility in order to fit it in the 12 field zone, and enlarge the bitmap export resolution.

The panoramic background export will work with the alignment rule of your background drawing in your Toon Boom software.

There are several alignment rules to consider:

- Centre Top and Bottom
- Centre Left and Right
- Centre First Page Horizontal
- Centre First Page Vertical
- Left
- Right
- Top
- Bottom

Centre Top and Bottom
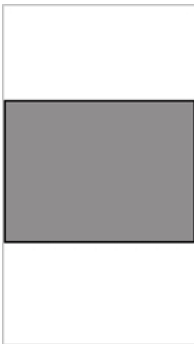
The Centre Top and Bottom rule is used for a vertical pan background where the default scene's 12 field is placed at the centre of the drawing.

Centre Left and Right

The **Centre Left and Right** rule is used for a horizontal pan background where the default scene's 12 field is placed at the centre of the drawing.

Centre First Page Horizontal

The Centre First Page Horizontal rule is used for a horizontal pan background where the default scene's 12 field is placed at the far left of the drawing.

Centre First Page Vertical
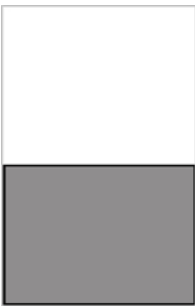
The Centre First Page Vertical rule is used for a vertical pan background where the default scene's 12 field is placed at the very bottom of the drawing.

Left

The Left rule is the default alignment for drawings. It aligns the drawings with the left side of the scene's alignment rectangle. Harmony scales the drawings to match their heights to the alignment rectangle of the scene.

Right

The Right rule aligns the drawings with the right side of the alignment rectangle. Harmony scales the drawings to match their heights to the alignment rectangle of the scene.

Top

The Top rule aligns with drawings with the top of the alignment rectangle. Toon Boom Animate scales the drawings to match their widths to the width of the alignment rectangle of the scene.

Bottom

The Bottom rule aligns the drawings with the bottom of the alignment rectangle. Toon Boom Animate scales the drawings to match the drawings' width to the width of the alignment rectangle of the scene.

As Is

The As Is alignment rule is used when you have artwork outside every edge of the 12 field size, such as a Safety Paint edge.

To properly export your background and re-import it so that it fits precisely into your scene, you have to provide utransform with the exact resolution that you want the file to be, since you are passing from a vector based image to a bitmap image.

There are a few rules that will help you understand the calculation that you must perform:

- 1 field width equals one inch.

- A 12 field chart has a twelve inch width.

- If you scale your drawing down to fit in the 12 field, you will have to enlarge the output resolution so that the final image has the same size as the original drawing (*which is not problematic since the source is vector-based*).

- When you re-import your painted background, the bitmap file will be fitted in the 12 field size. You will have increased the field size so that it fits the original image size.

To find the scale and DPI that you will need to export your image, you will need the following information:

- The field size of the drawing.

- The scene resolution.

NOTE: Note that this process will work with a 12x12 scene alignment and when using Harmony.

To export a .tvg file to bitmap using the As Is alignment:

1. In the Timeline or Xsheet view, select the cell that contains the drawing that you want to export.
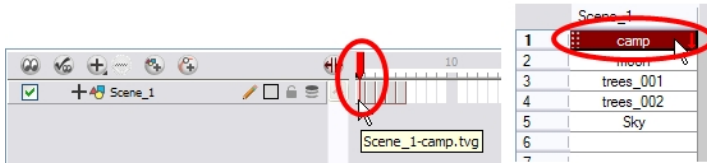

2. In the Tools toolbar, choose the **Select** ↖ tool. The default keyboard shortcut is [Alt]+[V].

3. In the Drawing view, select all of your drawing strokes. Select **Edit > Select All**. TheCtrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

4. In the Drawing view, place your mouse cursor over the top, right corner.
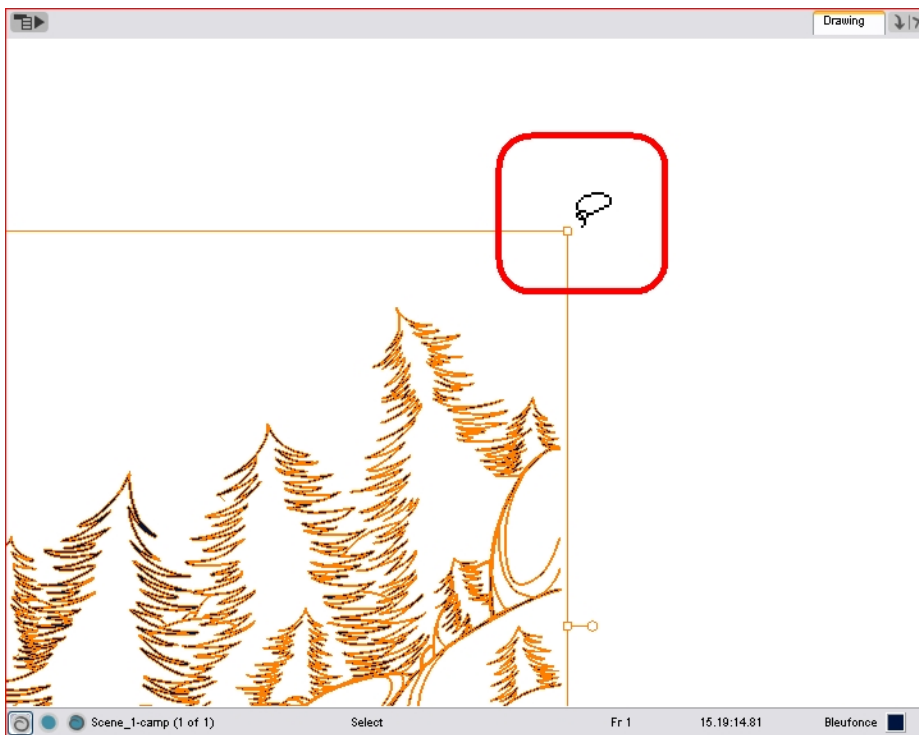
5. From the Drawing view's bottom toolbar, note the X and Y field chart information.
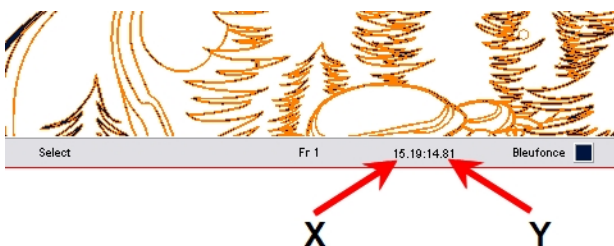
6. Repeat steps 4 and 5 for the bottom, left corner.
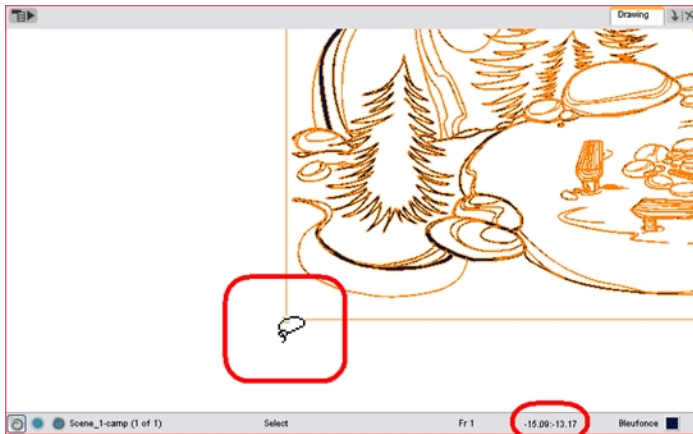
7. Once you have all of your field information, select the greatest X and Y values. These will give you the total field size of your drawing. This also tells you the width of your drawing, in inches (1 field width is equal to one inch).

Biggest X: 15.19
Biggest Y: 14.81

8. Divide the X and Y field values by 12 to know how much to scale the image to fit it in the 12 field.

X/12 = how much bigger your drawing is than the 12 field

Y/12 = How much bigger your drawing is than the 12 field

X: 15.19   Y: 14.81

15.19/12 = 1.27

14.81/12 = 1.23

9. Once you have both scaling values, calculate your official scaling value by dividing 1 by the greater of the two values. This will give you the official scaling value to enter into your utransform command line.

1/(X/12) or 1/(Y/12) = Scaling Value

X: 15.19   Y: 14.81

15.19/12 = 1.27

14.81/12 = 1.23

1/1.27=0.79

10. To enlarge the output resolution, you will have to give a precise amount of DPI. In this case, divide your scene resolution width (Rx) by 12 (fields) to know how many pixels per inch you have.

    Rx/12 = Pixels per inch.
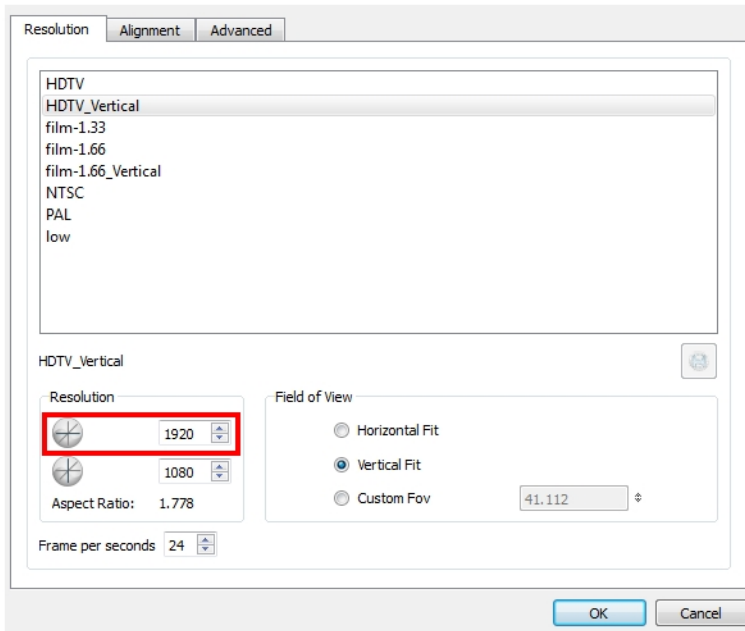
Rx = 2048

2048 / 12 = 170.66

Scene's DPI: 170.66

11. Once you have your scene's DPI, you need to enlarge it to re-scale your output to the correct size, since we scaled down the drawing strokes. To do so, multiply the scene's DPI by how much larger the drawing is than the 12 field (X/12) or (Y/12).

    (Rx/12) x (X/12) or (Y/12) = Amount of DPI needed for the drawing output

    Rx /12 = 170.66
    X / 12 = 1.27
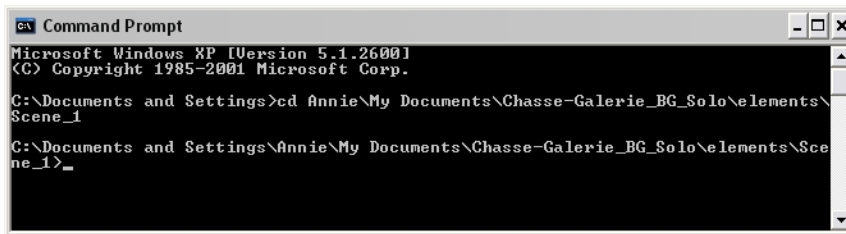
    170.66 x 1.27 =
        216.74

    amount of DPI
    needed for drawing
    output : 216.74

12. Once the values are calculated, open the command prompt to launch utransform.
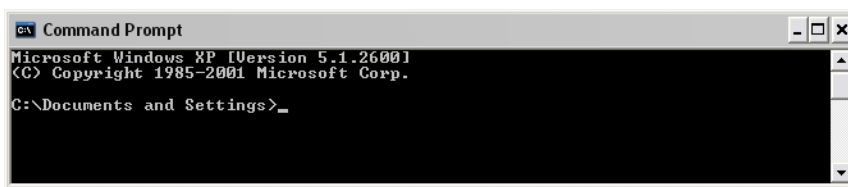
13. In the Command Prompt, go to the scene's element directory that contains the *.tvg drawing that you want to convert.
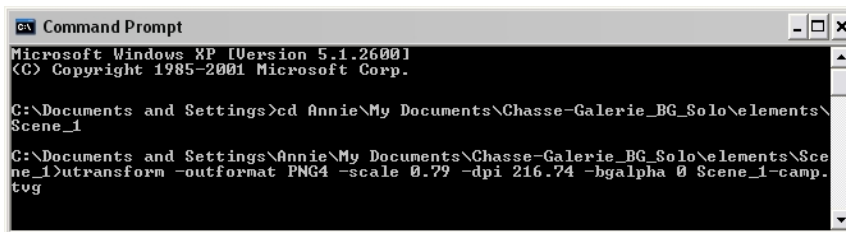
- ‣ Use the **cd** command to go back up one directory.
- ‣ Use the **cd \directory name** command to enter a new directory.
- ‣ Use the **dir** command to see the directories available.

14. Once in your scene's element directory, type:

- ‣ For Windows/Linux: **utransform -outformat file_format_you_need -scale scale_ value -dpi dpi_value -bgalpha 0 file_name.tvg**

- ‣ For Mac OS X: ./**utransform -outformat file_format_you_need -scale scale_value -dpi dpi_value -bgalpha 0 file_name.tvg**

Here is an example of what your command line should look like:

- ‣ For Windows/Linux: **utransform -outformat PNG4 -scale 0.75 -dpi 227.55 - bgalpha 0 bg-1.tvg**

- ‣ For Mac OS X: **./utransform -outformat PNG4 -scale 0.75 -dpi 227.55 -bgalpha 0 bg-1.tvg**

15. In the operating system, browse to the scene's element folder and open the new bitmap file to paint in third-party software.

To import a utransform bitmap background back in Toon Boom Harmony:

1. Open the Toon Boom Harmony scene where the background needs to be imported.

2. To import a bitmap:

- ‣ In the top menu, select **File > Import > Images**.

The Import Drawings dialog box opens.
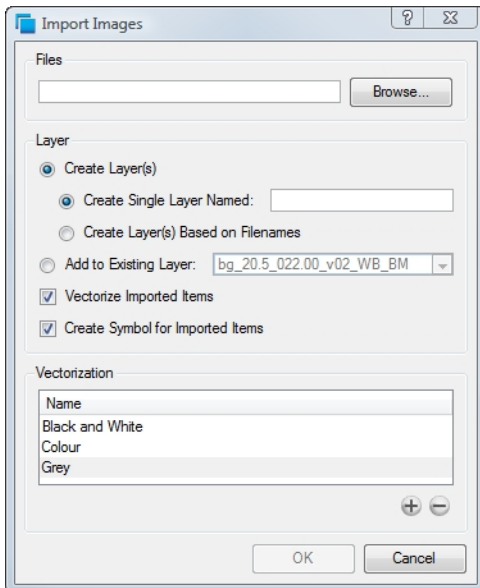
3. Click on the **Browse** button and select your bitmap background file.

4. Click on the **Open** button.

5. You can import the image into an existing element or create a new element.

    ‣   To import the image into an existing layer, select **Add to Existing Layer** and select the appropriate element from the list.

    ‣   To import the image into a new element, select

    Create Layer(s) > Create Single Layer Named and type a name for the element in the Name field.

6. Disable the **Vectorize Imported Items** option.

7. Click on the **OK** button.

8. Open the background's layer properties:
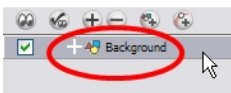
    ‣   In the **Timeline** view, double-click on the background's node.

    ‣   In the **Network** view, click on the background node's yellow square.

    The **Layer Properties** dialog box opens.

9. In the **Advanced** tab, set the alignment rule to **As Is**.
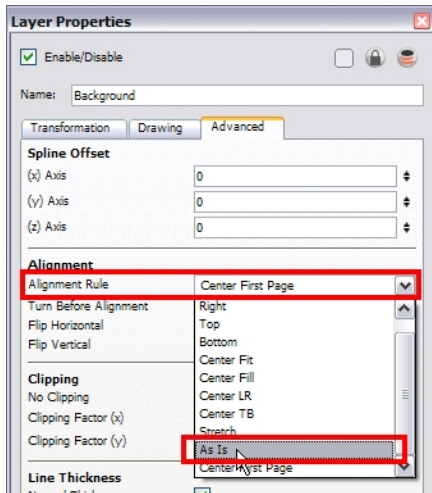
10. Click on the **OK** button.

11. Open the column editor:

    ▸ In the **Timeline** view, select the background's layer, right-click and select **Column Properties**.

    ▸ In the **Xsheet** view, double-click on the background column's header
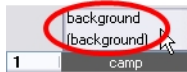
12. Take your previous (X/12) or (Y/12) value and multiply it by the scene's field to find the correct field size. Enter this into the Field Chart field.

    ▸ (X/12) or (Y/12) x Scene's field

    ▸ To see the Field Chart field, you must enable the **Advanced Element Mode** preference found in the Advanced section of the Preferences panel.
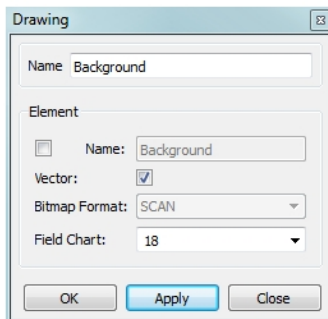
    Here is an example of what it should look like: 1.5 x 12 = 18

13. Click on the **OK** button.

ConsolidateDb Utility

The ConsolidateDb command line utility allows you to reduce the amount of drawings in your scene by merging the elements that have the same drawings together.

ConsolidateDb works by going through the target scene's elements to detect any pair of elements that contain the same drawings, which typically occurs when importing a template several times or when duplicating layers. If it finds two elements that have the same drawings, it will merge both elements together into a single element.

Merging elements is done by keeping the original element, deleting the drawings in the duplicate element, and linking the column that was originally linked to the duplicate element to the original element. If the duplicate element has any extra drawings that are not in the original element, those drawings are moved to the original element so that they do not get removed from the scene.

By default, ConsolidateDb will not merge two elements that appear to match if they have at least one drawing with the same name, but different artwork, as it would require renaming one of the drawings to keep both of them in the same element. With the **-renameTiming** option, ConsolidateDb will merge e#lements even if it has to rename some drawings to keep all of the drawings in both elements. It will also update the Xsheet columns with the new names of the renamed drawings to avoid affecting the rendered image.

NOTE:
- This utility only works on one scene at a time. Shell scripts must be used to run ConsolidateDb on an entire job, environment or database.
- ConsolidateDb can also be used on Harmony Stand Alone scenes.

IMPORTANT:
- It is possible to add palettes to individual elements, which makes it possible to make two elements with the same drawings use different colours. If two elements have the same drawings but have different palettes, ConsolidateDb will merge them together regardless, which will cause them to use the same palette and may affect the colours of the merged element in the rendered image.
- ConsolidateDb will delete files permanently from the target scene. Although it is designed to avoid affecting the rendered image and to only remove files that are unnecessary, it is highly recommended to make a backup of a scene before running ConsolidateDb on it.

Syntax

When using Harmony Server:

```
ConsolidateDb [options] -env <environment> -job <job> -scene <scene> -user <username>
```

When using Harmony Stand Alone:

```
ConsolidateDb [options] <path to scene folder>
```

Examples

```
ConsolidateDb -renameTiming -removeEmptyElements -env myProject -job
S03E05 -scene SC0015 -user jdoe

ConsolidateDb -verbose 2 C:\Users\jdoe\Documents\MyScene
```

Parameters

Parameter	Description
Database Scene Location	
-env <environment>	The environment in which the target scene is located.
-job <job>	The job in which the target scene is located.
-scene <scene>	The name of the target scene.
-user <username>	The Harmony user who will perform the consolidation.
Consolidation Options	
-renameTiming	By default, ConsolidateDb will not merge two elements if they contain drawings with the same name, but not the same artwork. With this option enabled, ConsolidateDb will merge elements as long as they have at least one drawing in common. When two drawings have the same name but not the same artwork, one of the drawings is renamed before it is moved to the merged element. This allows ConsolidateDb to keep all the drawings in the both elements without causing any naming conflict. The Xsheet columns will be updated to preserve the exposure of drawings getting renamed. Hence, the rendered image will not be affected.
-removeEmptyElements	By default, ConsolidateDb leaves the empty element folder behind after it has deleted all the drawings in a duplicate element. With this parameter, ConsolidateDb will delete an element after it emptied it.
-verbose 1 -verbose 2	Increases the amount of information reported to the terminal while the scene is being consolidated. Verbose mode 1 will output the following information: • The origin of each drawing in duplicate elements followed by their destination in the original element. • Each drawing file it deletes. Verbose mode 2 will output the following information: • The origin and destination of each drawing in both the original element and its duplicate elements. • Each drawing it removes from or adds to each

Parameter	Description
	column. • Each drawing files it deletes.
Miscellaneous	
-? -h -help --help	Displays the usage information in the terminal.
-v -version --version	Displays the version information in the terminal.