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INTRODUCTION

What can Xoom Photo do for me?

Xoom Photo is a very powerful package for manipulating and managing images.   Operations that you might be interested in performing on an image are as follows:

Clean it up to make it look better in a presentation or in a printed document.   The color enhancement tools allow adjustment of the brightness, contrast, and gamma of an image in a very exacting manner so that the image displays and/or prints at its best.

Convert an image to another file format.   The file format conversion capabilities allow exact control in converting an image from one format to another for use in another application. You can also take an image off the Clipboard that has been cut from another application and save it into any of the supported file formats.

Enhance the image.   Frequently, an image needs to be highlighted or modified to give it extra appeal. Xoom Photo has a number of special effects and filters that modify the image. See Image Menu Procedures for a list of procedures that tell you how to use the effects and filters.

Change the image size.   The crop and matte function, along with the scaling function, allow you to change the image to the proper size and characteristics needed.

Capture the output of another application.   The screen capture capabilities of the application allow quick capture of the output of another application for use in presentations and publications. See Capturing a Screen using Xoom Photo, Capturing a Screen using the Screen Capture Application, and Capturing a Screen from a DOS Application for more information.

Scan an image.   Directly connect your scanner to Xoom Photo to bring in your images from your scanner.   See Scanning an Image for further information.

Convert images between bit depths.   Often, you need to take a color image and make it black and white, or reduce the colors in a true color image to make it a palette color image. Xoom Photo supports combinations of image conversions.

Make decisions about how to correct an image. The test strip function allows you to examine a range of potential changes all at once. A test strip (miniatures of an original image all rendered in the different selected halftones or ranges of gamma, brightness, and contrast) can be printed to show the various results of enhancement operations.

Change the image orientation.   Often, you have an image that needs to be flipped, flopped, rotated, mirrored, or inverted. Quick functions exist in Xoom Photo that allow you to perform these operations. See Changing Image Orientation for further information.

Print an image.   Xoom Photo supports a full range of halftones for printing to bilevel printers, and also supports printing to all the Windows supported color and gray scale printers. See Printing an Image for further information.

Make a poster.   Xoom Photo supports making seamlessly tiled multiple page posters of an image. This is very useful for making printouts that are larger than the printed page of your printer. See Making a Multi-page Poster for further information.

INTRODUCTION

What is an Image?

An *Image* is the "document" that Xoom Photo works upon.   It is a picture that has been brought into the application from a file, a scanner, or the Clipboard.

An image is of a particular *image class*, which is determined by its *bit depth*. Bit depth, sometimes referred to as *bits per pixel,* refers to the number of bits that compose each pixel in the image, and determines how many colors or shades of gray are possible. The "deeper" the image, the more colors or shades of gray are possible. For example, an image with bit depth of one can contain two colors -- black or white, while a 4-bit image can contain 16 colors or shades of gray.

Image classes, determined by bit depth, are as follows:

Bilevel, or Black and White. (Each pixel in the picture is either black or white)   These are 1-bit images. Most black and white printers print bilevel images, and many applications that use images can only handle bilevel images.

Pseudocolor, or **Palette** - (Up to 256 colors for each pixel, determined by a palette). These are usually 8-bit images. A palette allows you to define which color each pixel value represents. Images that come from paint packages are usually 4-bit (16 color) or 8-bit (256 color) images. The color interpretation of each pixel in a palette image is not determined from the pixel value itself. Instead, the pixel value is used as an index into a table of red, green, and blue values that define the color of the pixel. This table is the image palette, and is stored with the image.

Gray Scale - (Up to 256 gray shades for each pixel, determined by a palette)   These are generally 8-bit images. In gray scale images, each pixel value is interpreted as a level of grayness or brightness, ranging from completely black to completely white. Most desktop publishing packages can use gray scale images.

True Color - (256 colors for each Red, Green, or Blue portion of a pixel)   True color images are 24-bits per pixel. They are composed of a triple of 8 bits Red, 8 bits Green, and 8 bits Blue. True color images can be made up of up to 16.7 million colors.

See also:

Image Classes

INTRODUCTION

Why do some images look more defined?

Images have the attribute of *spatial resolution*.

Spatial resolution is defined by the two-dimensional (width and height) array of pixels that makes up an image. It is spatial resolution that accounts for our perception of how much detail is in an image. An image with spatial resolution of 640 (pixels) x 480 (pixels) contains about 300,000 pixels (640 x 480 = 307,200). One with a spatial resolution of 1024 x 768 contains over twice that many (1024 x 768 = 786,432).

The greater the value of the width and height (and, consequently, the higher the spatial resolution of the image), the higher quality the image. This is because the more individual pixels available to construct an image, the greater degree of definition available. Fewer, larger pixels make a coarser, less-defined image.

INTRODUCTION

How does printer DPI relate to printed image size?

In addition to spatial resolution (height and width in pixels), an image to be printed can be measured in terms of printer resolution, or *Output Dots Per Inch* (DPI). Output Dots Per Inch refer to just that: the number of dots per inch on the printed page. Typical laser printers can print from 150 to 300 DPI, while image setters can print at as high as 2460 DPI. The higher the DPI, the better the quality of the final image.

It is important to note in Xoom Photo that while an image may have a spatial resolution of *n* pixels by *m* pixels, this resolution does not necessarily correspond one-to-one to the output resolution. For example, a 640 x 480, 100 DPI image is 6.4" x 4.8" (in real world measurement). You might be tempted to assume that if you print it at 100 DPI it will take up 6.4" x 4.8" on the printed page, and if you print it at 200 DPI it will be half as large, but this is not the case. Xoom Photo will print the image 6.4" x 4.8", regardless of the printer DPI, but the resolution of the 200 DPI output image will be twice as fine as it would be at 100 DPI.

INTRODUCTION

What are Halftones?

Halftoning is a method of representing color or gray scale images with only two shades: black and white. To get an idea of what halftoning is, take a look at a newspaper photograph. If you look closely enough, you'll see that the image is not one continuous blend of grays, but rather a collection of variously sized black dots. From reading distance, the mind blends these dots and the white background together to simulate gray.

Traditional halftones are produced by placing a screen over a photograph and re-shooting the photograph. The screen divides the photograph into regularly spaced patterns of dots. The darkness of the image determines the size of the dot: light areas produce small dots, medium areas produce medium size dots, and dark areas produce large dots. This variation in dot size simulates the smooth tones of the original photograph.

The further away the eye is from the halftone, the harder it is to see that it is a pattern of dots, and the more it appears to be smooth shades of gray. Exactly how far back your eye needs to be for you to perceive the halftoned image as a photograph is determined by the halftone resolution, which is measured in *Lines of Dots Per Inch* (LPI). The lines are the ones drawn through the centers of the dots. Higher LPI values mean that all the dots are smaller and more closely spaced.

The overall appearance of a printed image is determined by the halftone options selected. Different halftone patterns will produce different end results depending on the original image and the printer DPI. LPI values are dependent upon DPI, and LPI values have a much lower range than DPI values, because it takes many dots to make a halftone.

Digital halftoning is similar to traditional halftoning in that the image is represented by a series of dots. However, computer hardware cannot produce variable size dots. Thus, each computer halftone "dot" is actually composed of a grid or cell of smaller dots. Each of these smaller dots within the cell is turned either on or off. A cell with all dots "off" is white, one with all dots "on" is black. You can see, then, that the more dots on, the darker the cell. When combined, the cells produce a pattern that creates a halftone image.

Images can be halftoned in one of three ways: upon input during scanning, through manipulation on-screen, or during the printing process.

Xoom Photo uses halftoning to display images that have been converted from gray scale or color into bilevel. In addition, you may specify a halftone pattern during the printing operation.

See also:
How to work with Halftones

INTRODUCTION

What is Image Processing?

The term image processing is used to mean a variety of things, from simply enhancing the visual appearance in an image to extracting statistical data from an image using sophisticated analysis techniques. In the broadest sense, it is applying functions that will improve the quality or clarity of an image. All image processing is performed by mathematically operating on the values of the pixels. Technically, all the operations in Xoom Photo are processing an image in one way or another, and most are oriented toward image enhancement rather than analysis.

The Color Map operations process the image and manipulate the brightness (how white the image is), contrast (range of dark and light areas), and, in color images, the color values themselves. Filtering operations allow you sharpen or soften or remove unwanted specks from an image. You can perform a number of special effects including edge enhancement, line tracing, posterization, and making a negative.

See also:

Image Menu: Procedures

Color Map Menu: Procedures

INTRODUCTION

What is compression?

An image with a high bit depth and high spatial resolution can require a significant amount of storage.

For example, a 640 x 480, 8-bit image requires 300k of storage   (640 x 480 =307,200), while a 24-bit image of the same spatial resolution requires nearly 1 mb (640 x 480 x 3 = 921,600)!

To address this issue, standard methods of *image compression* have been developed.

Simply stated, image compression is a mathematical technique that allows an image to be stored with less memory. Redundancies in the make-up of the image are identified, given a code, and the data in the redundancies are replaced by the code. Since the code needs fewer bits than the redundancies it represents, the amount of space required to store the image is reduced. Methods of compression are commonly referred to as "schemes" or "types. "

There are two types of compression: *Lossless* and *Lossy.* Lossless compression allows full recovery of the original image and is a fully reversible process. Lossy compression, on the other hand, attempts to take advantage of how color is perceived and degrades the image during compression.

Common compression types are as follows:

RLE (Run Length Encoding) - The actual implementation of RLE varies, but generally it works as follows: A count is associated with a pixel value to take advantage of the repeating pixel values. For example, a line of 250 gray pixels would be RLE encoded by the number 250 followed by the numerical value for Gray. This would result in significant compression; unfortunately most images are not of constant color (especially scanned images). For storing images that are of large blocks of constant color, RLE can give very good compression ratios.

Modified Huffman - This method is a variation on RLE that uses a standard table of patterns that are thought to represent typical patterns in an image. These tables are usually tuned to the type of data they are used to compress.

CCITT FAX Group 3 and Group 4 -   The image is first run length encoded, then Huffman encoded. The CCITT (Consultative Committee for International Telegraph and Telephone) standard compression scheme was developed to standardize FAX transmittal of bilevel images. Group 4 is a more advanced version of Group 3, but both are conceptually the same. The Huffman encoding tables are standard and are not included in the image during storage, thus saving additional space.

LZW (Lempel-Zif) - This technique, named after the individuals who created it, is a lossless compression algorithm. LZW is adaptive, and maps a translation table into common patterns in adjacent pixels across a row. The tables are different for each strip, but need not be stored with the image.   LZW compression can be further enhanced by *horizontal differencing,* which is a technique that takes advantage of the fact that, in many images, the difference between adjacent pixels is frequently zero or a small number. Instead of compressing the actual value, LZW then compresses the differencing values of the adjacent pixels.

See also:

Compression: Overview and Commands

INTRODUCTION

What are Image File Formats?

File formats are standardized methods of organizing images based on image class and compression type. Common file types include the following:

BMP (extension .BMP - an internal format used by Windows and OS/2.

CUT (extension .CUT) - a file format developed by Media Cybernetics; it is the main file format of the popular Dr. HALO IV paint package.

GIF (extension .GIF) - Graphics Interchange Format, developed by CompuServe Incorporated.

IMG (extension .IMG) - developed by Digital Research, and used extensively by Ventura Publisher.

MSP (extension .MSP) - developed by Microsoft for Microsoft Paint.

PCX　(extension .PCX) - developed by ZSoft Corporation.

TIFF (extension .TIF) - Tagged Information File Format; the standard, default, file format for Xoom Photo.

TGA (extension .TGA) TARGA - developed by TrueVision.

See also:

Working with Other File Formats

INTRODUCTION

What Image File Formats can I use?

Xoom Photo works with Bilevel (black and white), Palette, Gray Scale, or True Color images in different file formats. In addition, the application allows you to convert between image classes. If you have an image containing more colors than your display device can support, the application still allows you to work on the image, and, if necessary, will simulate the non-supported colors on the screen.

Xoom Photo converts all images that are less than 256 colors or gray scales to 256 color images, with the exception of black and white images, which are handled as black and white bilevel images.   You can write out variable types of image classes when saving or can convert the image to one of the different image formats, and can view the results before saving.

See also:

Working with Other File Formats

INTRODUCTION

After I have manipulated an Image, then what?

Once you have an image on the screen in Xoom Photo, the way you want it, there are a number of things that you can do with it.

Save it as a file to use in a word processor or desktop publishing application.

Cut/Copy the entire image or a part of it to the Clipboard for pasting into another Windows application, such as Microsoft Word for Windows.

Print it using your Windows-supported printer, either actual size or as a multi-page poster.

INTRODUCTION

How do I use images in other applications?

Xoom Photo is the ideal vehicle for including images in your word processed or desktop published documents. Once you have processed the image to your satisfaction, the method you choose to incorporate the image into a document will depend on the capabilities of the publishing package that is to receive the images and the hardware used to print the documents. You should experiment with different techniques to determine which method gives the best results with your application.

The are two ways to transfer an image from Xoom Photo to a word processor or desktop publishing package:

> Save your image in a file format compatible with your application (use the File Type option on Xoom Photo's Save As menu). Be sure you also store the image using compatible Image Class and Compression settings (on the Save As Options menu). The file formats your application accepts should be described in you application's User Manual.

> If the other package is also a Windows application, and supports the Windows Clipboard, select Cut, Copy or Copy As functions.

For some applications, it might be necessary to first convert the image to a bilevel image for pasting or saving.

Retouch Tools

Overview

Xoom Photo Retouch tools give you the capability to perform sophisticated paint and retouch functions to your images. You can paint, draw, add texture, extract colors from an image, and copy one portion of an image to another.

The Retouch Tools panel contains the following commands:

Command	Description
Pen	The Pen tool of the Retouch Tools panel allows you to draw in the image using connected strokes. The pen strokes will be in the currently selected foreground color. Pen Options Pen Procedure
Brush	The Brush tool of the Retouch Tools panel allows you to draw in the image using brush strokes. The difference between using the Brush and the Pen is that the brush strokes are more free-flowing, approximating the strokes of a brush. Brush Options Brush Procedure
Extract Color	The Extract Color tool allows you extract colors from an image.
Special Effects	The Special Effects tool of the Retouch Tools panel allows you to apply special effects to the image using brush strokes. Special Effects Options Special Effects Procedure
Eraser	The Eraser tool of the Retouch Tools panel allows you to erase changes to the image using brush strokes. Eraser Options Eraser Procedure
Spray Paint	The Spray Paint tool allows you to dispense paint in the image in a dot pattern based on the currently selected brush shape. Each click of the mouse is similar to pressing the nozzle on an actual Spray Paint can. Spray Paint Options Spray Paint Procedure
Texture Brush	The Texture Brush tool of the Retouch Tools panel allows you to superimpose a Texture Brush onto an image. The Texture Brush is set under the preferences option of the Edit menu. A texture can be imposed from any saved image file. Texture Brush Options Texture Brush Procedure
Ditto	The Ditto tool allows you to paint the contents of a defined reference point in an image to another point. In other words, as you move the brush when in ditto mode, the area under the brush changes to match the referenced area in the image. Continuous drawing while in ditto mode would lead to a copy of an entire area of an image into another area. Ditto Options Ditto Procedure

Retouch Tool Shape Options   A group box labeled Brush is contained in each of the Options dialog boxes accessed by clicking the right button on a Retouch tool. This box lets you control the size and shape of the brush or pen you are using. The actual tool shape is displayed in a small box within this box.

Retouch Tool Shape Options

Retouch Tools

Pen Options

Clicking with the right button on the Pen icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Pen tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). This can be compared to how hard you press a real pen or pencil when drawing on paper.
Apply	The options under Apply determine which portions of the image are affected by a pen stroke, as follows: **Always** - Apply to all pixels **On Lighter Only** - Apply to pixels whose values are brighter (greater) than those that the pen would create. **On Darker Only** - Apply to pixels whose values are darker (lower) than those that the pen would create. **Hue** - Change only the Hue value of the pixels; do not change saturation and intensity. **Color** - Apply only the color (saturation). This is useful for tinting black and white images.
Apply Evenly	Select this option if you want the pen stroke to affect each pixel only once, no matter how many times the pen is moved over an area. This insures that the pressure applied to each pixel is identical. If this option is off, the pen strokes will be cumulative.
Add Texture	Select this option to mix the currently active texture with the pen stroke. The effect will be to paint the texture with the pen stroke.
Spacing	Determines the distance between the centers of each pen stroke.

Retouch Tools

Pen Procedure

To draw in the image using the Pen:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Pen function**. Click on the Pen icon with the left button.
    or
    (Optional) Change the Pen options. Click on the Pen icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Pen function will be activated.

3. **Draw in the image**. Move the cursor to the image, then hold the left button down and draw. To erase a mistake, you can trace over it while you hold down the right button. If you wish to erase an entire drawing session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Brush Options

Clicking with the right button on the Brush icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Brush tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). This can be compared to how hard you press a real pen or pencil when drawing on paper.
Apply	The options under Apply determine which portions of the image are affected by a pen stroke, as follows: **Always** - Apply to all pixels **On Lighter Only** - Apply to pixels whose values are brighter (greater) than those that the pen would create. **On Darker Only** - Apply to pixels whose values are darker (lower) than those that the pen would create. **Hue** - Change only the Hue value of the pixels; do not change saturation and intensity. **Color** - Apply only the color (saturation). This is useful for tinting black and white images.
Apply Evenly	Select this option if you want the pen stroke to affect each pixel only once, no matter how many times the pen is moved over an area. This insures that the pressure applied to each pixel is identical. If this option is off, the pen strokes will be cumulative.
Add Texture	Select this option to mix the currently active texture with the pen stroke. The effect will be to paint the texture with the pen stroke.
Feather	This gives the brush a "feathered" edge, and mimics a real brush more accurately. The feather values range from 0 (no feathering) to 10 (very feathered).
Fadeout	A fadeout value will determine whether the brush stroke becomes fainter and fainter as it is passed over the image, much like a real stroke with a paint brush. The values range from 0 (no fade) to 10 (fade to transparent).

Retouch Tools

Brush Procedure

To draw in the image using the Brush:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Brush function**. Click on the Brush icon with the left button.
   or
   (Optional) Change the Brush options. Click on the Brush icon with the right button to access

the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Brush function will be activated.

3. **Draw in the image**. Move the cursor to the image, then hold the left button down and draw. To erase a mistake, you can trace over it while you hold down the right button. If you wish to erase an entire drawing session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Special Effects Options

Clicking with the right button on the Special Effects icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Special Effects tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). This can be compared to how hard you press a real pen or pencil when drawing on paper.
Apply	The options under Apply determine which effect you wish to apply, as follows: **Sharpen** - Increases contrast along the edges in the image **Soften** - Softens, or blurs the edges in the image **Lighten** - Increases the brightness (amount of white) in the image **Darken** - Decreases the brightness (amount of white) in the image **Smudge** - Blends the area under the brush in the direction you move. **Shuffle** - Randomly mixes the pixels in the area
Apply Evenly	Select this option if you want the pen stroke to affect each pixel only once, no matter how many times the pen is moved over an area. This insures that the pressure applied to each pixel is identical. If this option is off, the pen strokes will be cumulative.
Feather	This gives the special effects brush a "feathered" edge, and mimics a real brush more accurately. The feather values range from 0 (no feathering) to 10 (very feathered)

Retouch Tools

Special Effects Procedure

To apply special effects:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Special Effects function**. Click on the Special Effects icon with the left button.
   or
   (Optional) Change the Special Effects options. Click on the Special Effects icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Special Effects function will be activated.

3. **Apply the special effects in the image**. Move the cursor to the image, then hold the left button down and apply the effects to the image. To erase a mistake, you can trace over it while you hold down the right button. If you wish to erase an session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Eraser Options

Clicking with the right button on the Eraser icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Eraser tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). This can be compared to how hard you press a real pen or pencil when drawing on paper.
Erase	Select the operation you wish to erase. Depending on how many Undo levels you have set through the Preferences option of Xoom Photo Edit menu, you can Erase up to the last three operations.
Apply Evenly	Select this option if you want the stroke to affect each pixel only once, no matter how many times the Eraser is moved over an area. This insures that the pressure applied to each pixel is identical. If this option is off, the strokes will be cumulative.
Feather	This gives the Eraser a "feathered" edge, and mimics a real brush more accurately. The feather values range from 0 (no feathering) to 10 (very feathered).
Use Back-ground	Select this option if you wish to replace the erased area with the background color rather than the original image area.

Retouch Tools

Eraser Procedure

To erase changes in the image:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Eraser function**. Click on the Eraser icon with the left button.
   or
   (Optional) Change the Eraser options. Click on the Eraser icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Eraser function will be activated.

3. **Apply the Eraser in the image**. Move the cursor to the image, then hold the left button down and apply the effects to the image. To undo an erasure, you can trace over it while you hold down the right button. If you wish to undo an session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Spray Paint Options

Clicking with the right button on the Spray Paint icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Spray Paint tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%.) This can be compared to how hard you press a real pen or pencil when drawing on paper.
Apply	The options under Apply determine which portions of the image are affected by a pen stroke, as follows: **Always** - Apply to all pixels **On Lighter Only** - Apply to pixels whose values are brighter (greater) than those that the pen would create. **On Darker Only** - Apply to pixels whose values are darker (lower) than those that the pen would create.
Speed[ms]	This affects the speed of the spray paint.
Random	This causes the pattern formed by each "spray" to be different upon each click of the button.

Retouch Tools

Spray Paint Procedure

To spray paint in the image:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Spray Paint function**. Click on the Spray Paint icon with the left button.
   or
   (Optional) Change the Spray Paint options. Click on the Spray Paint icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Spray Paint function will be activated.

3. **Apply the Spray Paint in the image**. Move the cursor to the image, then press the left button down for each "spray" of paint. Holding the left button and moving the cursor over the image approximates holding down the button on a Spray Paint and moving over an object. To undo a spray, you can trace over it while you hold down the right button. If you wish to undo a session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Texture Brush Options

Clicking with the right button on the Texture Brush icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Texture Brush tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). This can be compared to how hard you press a real pen or pencil when drawing on paper.
Apply	The options under Apply determine which portions of the image are affected by a pen stroke, as follows: **Always** - Apply to all pixels **On Lighter Only** - Apply to pixels whose values are brighter (greater) than those that the pen would create. **On Darker Only** - Apply to pixels whose values are darker (lower) than those that the pen would create.

Retouch Tools

Texture Brush Procedure

To add texture to the image:

1. **Select an image to use as a texture.** Open the Edit menu of Xoom Photo and choose Preferences. Select the Brush Icon. Select the Texture Brush button. Choose an image file to use as the texture.

2. **Access the Retouch tools.** If the Retouch panel is not displayed, open the Windows menu of the Imager and select Show Retouch. The Retouch panel will be displayed.

3. **Select the Texture function**. Click on the Texture Brush icon with the left button.
   or
   (Optional) Change the Texture Brush options. Click on the Texture Brush icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Texture Brush function will be activated.

4. **Apply the Texture Brush in the image**. Move the cursor to the image, then hold the left button down and move the cursor across the image. The texture defined by the image you selected in the Preferences option of the Edit Menu will be applied to the image. To undo a stroke you can trace over it while you hold down the right button. If you wish to undo a session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Ditto Options

Clicking with the right button on the Ditto icon of the Retouch panel will access the following options:

Brush	This box contains controls for changing characteristics of the Pen tool including shape, size, edge size and whether the tool is solid or hollow. See <u>Retouch Tool Shape Options</u> for more information.
Pressure	Select a pressure value from 0 to 100 to indicate the percent of application of the pen stroke. The higher the number, the "harder" the pressure and the heavier the stroke. (For example, selecting 100 causes the pen to stroke at its maximum, or 100%). The higher the number the more the Ditto is
Ditto	**Always** - Apply to all pixels **On Lighter Only** - Apply to pixels whose values are brighter (greater) than those that the pen would create. **On Darker Only** - Apply to pixels whose values are darker (lower) than those that the pen would create.
Apply Evenly	Select this option if you want the pen stroke to affect each pixel only once, no matter how many times the pen is moved over an area. This insures that the pressure applied to each pixel is identical. If this option is off, the pen strokes will be cumulative.
Feather	This gives the brush a "feathered" edge, and mimics a real brush more accurately. The feather values range from 0 (no feathering) to 10 (very feathered).

Retouch Tools

Ditto Procedure

To copy a portion of an image into another area of the image:

1. **Access the Retouch tools.** If the Retouch panel is not displayed, click on the Retouch Tools minimized icon. The Retouch panel will be displayed.

2. **Select the Ditto function**. Click on the Ditto icon with the left button.
   or
   (Optional) Change the Ditto options. Click on the Ditto icon with the right button to access the Options dialog box. Adjust the options accordingly. Exit the dialog box when the options are as desired. The Ditto function will be activated.

3. **Set the reference point**. Move the cursor to the desired beginning reference point in the image and press CTRL + LEFT BUTTON. A small box appears, designating the reference point.

4. **Begin the copying.** Move the cursor to the area of the image you wish to hold the copy, then hold the left button down and move the cursor across the image. The referenced area begins to be copied into the new area. Note that as you move the cursor, the box representing the reference point also moves. To undo a stroke you can trace over it while you hold down the right button. If you wish to undo a session, double click on the right button, or use the <u>Undo function</u> of Xoom Photo Edit menu.

Retouch Tools

Retouch Tool Shape Options

A group box labeled Brush is contained in each of the Options dialog boxes accessed by clicking the right button on a Retouch tool. This box lets you control the size and shape of the brush or pen you are using. The actual tool shape is displayed in a small box within this box. This group box contains the following options:

Shape	Select a shape for the tool from the list of shapes in the upper left corner of the dialog box.
Size	Controls the tool size. The value is equal to the size of a square that completely encloses the selected shape measured in pixels. You should choose a size appropriate for the retouching you are performing (for example, larger sizes work best for retouching large image areas, while smaller sizes work best for detailed work). Note that larger sizes tend to be more sluggish in operation, but also apply more evenly if you use them slowly.
Edge	Controls the thickness of the outline of a hollow tool shape. The value is measured in pixels and only affects the tool shape when the Solid Brush control is checked.
Solid Brush	If this box is checked, the tool shape will be filled regardless of the value set in the Edge option. If the box is unchecked, the tool shape will be hollow with an outline edge in the size set in the Edge option.

Retouch Palette

Overview

You can select foreground and background colors for the Retouch functions from the Palette. You can edit any color in the displayed palette by first selecting the color, then using the Edit Selected Color Option to change components of the color.

Procedures

Selecting Drawing Colors from the Palette

To select a color from the palette:

1. **Access the Palette.** If the Palette is not displayed, open the Color Map menu of Xoom Photo and select Show Palette. The Palette is displayed. The Palette is changed to reflect the currently active image.

2. **Select whether to choose a background or foreground color**. Click on the desired button in the lower right corner of the Palette panel.

3. **Select a color.** Move the cursor to the grid of colors displayed. Click the left button over a color to select it. The foreground and/or background color indicators on the Retouch panel are updated.

4. **(Optional) Change the selected color.** Double click on the selected color to display the Edit Selected Color window. You can then choose a different color from any of the 16.7 million available, and, if desired, edit the aspects of that color.

Editing Selected Drawing Colors

To edit a selected color**:**

1. **Select a color model.** You can work in either the RGB or HSV color models. RGB mode is useful when you need to select a color with nearly exact amounts of Red, Green and Blue. HSV mode provides a more intuitive interface which allows you to first choose a basic hue, then select from all available colors in that hue.

2. **Change the color.**
   In RGB mode, move the slider on the bar in the center of the dialog box up to add red, and down to subtract red. Move the caret in the box in the left of the dialog to determine amounts of blue and green. If the caret is in the lower left corner of the box, no blue or green will be added. If the caret is in the upper right corner of the box, the maximum amount of blue and green will be added. The caret's placement elsewhere in the box will determine the amounts of blue and green as follows: the closer to the top left corner the more blue, the closer to the bottom right corner, the more green.

   In HSV mode, use the slider on the bar in the center of the dialog box to select a hue. Move the caret in the box in the left of the dialog to determine the saturation (color purity) and value (brightness) of the selected hue. If the caret is in the lower left corner of the box the hue will be at its minimum saturation and value. If the caret is in the upper right corner of the box, the hue will be at its maximum saturation and value. The caret's placement in elsewhere in the box will determine the value and saturation as follows: the closer to the top left corner, the brighter, the closer to the top right corner, the more saturated.

In either model, you can enter exact values in the edit control boxes in the upper right corner of the dialog box.

Text Utility

Overview and Procedure

With the Text utility you can add text to an image in selected fonts with a variety of options.

To add text to an image:

1. **Make the image active.**
2. **Access the Text Utility**. Open the Color Map Menu and select Show Text. The Text dialog box appears.
3. **Select a font.** From the Font face field, select a font.
4. **Select a font size**. From the Font size field, select a size.
5. **Select an optional style.** From the Font style field, select Normal, Bold, Italic, Underline, Strike Out, Drop Shadow, or any combination.
6. **Select Line Spacing.** Select a number for line spacing (i.e., the number of lines between each line of text).
7. **Type the text**. In the text box, type the desired text. Add carriage returns at the end of each line as necessary. If you type a string of text that is wider than the image which you are annotating, Xoom Photo will clip the end of the text to fit the window.
8. **(Optional) Select a color.** If you wish to use a different color for the text than the currently selected foreground color, choose another one from the image or the palette. If you wish to use a different color for the text dropshadow than the currently selected background color, choose another one from the image or the palette.
9. **Update the text.** When the text is in the desired font, size, field, and style, press the Update button. A box representing the text in white on black will appear in the image.
10. **Place the text.** With the left button pressed, move the cursor until the text is in the desired area. Press the right button to place the text.

Image Classes

Overview

Xoom Photo can work with four <u>image classes</u>: <u>bilevel</u>, <u>gray scale</u>, <u>palette</u>, and <u>true color</u>. For a complete table of image class and file format support, see <u>Working with other File Formats</u>.

Note that image classes are independent of file format. Some file formats, such as TIFF, support all of Xoom Photo-supported image classes. Others, such as IMG and MSP, support only the bilevel class.

Note also that in Xoom Photo, image classes are mostly independent of compression, except for bilevel images, which use Fax Group 3 and 4.

Image Class Conversion Commands

Commands in Xoom Photo that allow you to convert images include the following:

<u>Batch Convert</u> (File Menu) Lets you convert a number of image files at once without opening them.

<u>Convert</u> (Image menu) Lets you convert the image and displays it in a new window.

<u>Copy As</u> (Edit menu) Lets you convert the image you copy to the Clipboard.

<u>Save As</u> (File menu) Lets you convert the image and save it in the new image class.

Image Class Considerations

Note the following when working in Xoom Photo:

Bilevel images that are imported or read into Xoom Photo can be converted to a different image class, even though they are strictly black and white images.

It is generally a good idea to convert bilevel images to gray scale images, and palette images to true color images to work with them in Xoom Photo. If the other applications in which you will use these images do not support gray scale or true color, you can then convert back to the original class when saving.

Palette images in Xoom Photo are 8-bit images, and therefore have 256 colors. Palette image files of less than eight bits are converted to 8-bit when they are imported. These take less space than true color images and are the only type of color files supported in many programs.

See also:

<u>What is an Image?</u>

Halftones

Overview

The ability to halftone is one of the more important features of Xoom Photo. Most black and white printers must convert color or gray scale images to halftones before printing. Also, many applications, such as graphical word processing applications, cannot make use of gray scale, palette or true color images. Even if they can use such images, the applications usually are somewhat limited in converting the images to halftones for printing. Therefore, Xoom Photo can be of great benefit in converting images to halftone.

Setting Halftone Resolution

Halftone resolution is measured in terms of Lines per Inch (LPI). In Xoom Photo, four choices of LPI are available for each halftone pattern; those choices are based upon the selected printer DPI.The four choices are mathematically calculated by Xoom Photo when you specify a DPI, and are those that produce a specific number of gray shades based upon the DPI.

Generally, the higher the LPI value used, the less obvious the halftone pattern will be, but there is an important trade off: the higher the LPI value, the lower the number of distinct gray shades represented. At the resolution of most laser printers (300 DPI), a 70 LPI halftone can only represent 19 shades of gray. On most images this is enough, but others, particularly those with subtle shading, will exhibit undesirable posterization, giving your images a "paint-by-numbers" look. If this occurs, you might try the next lowest LPI value.

Halftone Screens

The most common halftone screen, or pattern, is the Angled Dot. This pattern gives the best results for all types of imagery, but other patterns are available that will give your output a subtly different look. (You can compare this to changing typeface to enhance the style of a text document.)

Xoom Photo provides three basic halftone screens: Dot, Line, and Diffuse.

> **Dot screens** use varying sized dots to represent shades of gray. The screens may be angled at 45 degrees (Angled Dot Screen), or 90 degrees (Flat Dot Screen). Each dot screen is available in four different resolutions, the choices for resolutions dependent upon the selected DPI.

> **Line screens** use varying thickness lines to simulate shades. The lines may be angled at 45 degrees (Angled Line Screen), Horizontal, or Vertical. Each line screen is available in four different resolutions, the choices for resolutions dependent upon the selected DPI.

> **Diffuse screens** use a digital technique called Error Diffusion to simulate shades with seemingly random patterns. Generally, these tend to give a smoother look to the output, and are more effective at lower resolutions. Diffuse patterns are not halftones in the traditional sense, and cannot be measured in LPI resolution. Error diffusion is available in four methods: 4 weight, 12 weight, Fuzzy, and Random.

Following is a table summarizing Halftone Options:

Halftone Pattern	Screen	Resolution
Dot Screen	Angled (45 degree)	4 available LPI choices, dependent on printer DPI
	Flat (90 degree)	Same as above
Line Screen	Angled (45 degree)	Same as above
	Horizontal	Same as above
	Vertical	Same as above

Error Diffuse	N/A	4 weight, 12 weight, Fuzzy, Random

Halftones and Other Applications

Few desktop publishing or word processing applications allow you to choose the style or resolution of the halftone, and none have the variety of styles and resolutions provided by Xoom Photo. Many will not accept gray scale or color images. For this reason it will often be best for you to use Xoom Photo to halftone the image before it is sent to the other application. When you halftone, make sure to set the output resolution (DPI) to the same value as the other application. If you use a different value, the image may be printed in a different size and/or may appear grainy.

If your word processing or desktop publishing application supports gray scale or color images directly and you print the same document at different resolutions (for example, you "proof" the document in-house, but send it to a service bureau for final print), you should keep the image as gray scale rather than halftone it using Xoom Photo. This will give the best results in the final document, because the service bureau will halftone the image at the higher resolution, but can only print an already halftoned image at the resolution it was halftoned in Xoom Photo. For example, if you used Xoom Photo to halftone the image to 300 DPI for your laser printer, but had the document printed at 1200 DPI, the image would still be at 300 DPI and would not benefit from the higher resolution.

Halftone Commands

An image can be converted to halftone in one of three ways: during a scan, during a print, and while in Xoom Photo. The following commands can be used to convert an image to halftone.

Scan (File Menu) Some scanners have the capability to halftone upon scanning. Use the scanner setup menu.

Print (File Menu) You can either use the halftone capability provided by the printer, or designate a halftone pattern as one of the options upon printing.

Save As (File Menu) You can save an image as a bilevel halftone in any file format that supports bilevel.

Batch Convert (File Menu) You can convert a number of files as bilevel halftoned files.

Convert (Image Menu) You can convert the active image to bilevel and halftone it.

Test Strips (Image Menu) You can test the various halftones to choose the best one for the image. See Test Strips and Halftoning next.

Test Strips and Halftoning

Using the Test Strips command of the Image menu, you can generate a test image that contains samples of how the image would look in the various halftone patterns at various LPIs. The test strip can be evaluated visually on the screen, or printed. See Making a One Halftone Type/All Screens Test Strip and Making a One Halftone per Screen Test Strip for more information.

See also:

What are Halftones?

Compression

Overview

Image file sizes can become very large. If nothing is done to reduce its size, a full-page (8 1/2" by 11") true color 24-bit image file at 300 dpi occupies over 24 million bytes of memory. To reduce disk space requirements, nearly all image file formats allow some form of compression.

Xoom Photo allows you to use the common compression techniques associated with all of its supported file formats. All of the compression techniques supported in Xoom Photo are <u>Lossless</u>; you do not lose any image information by using the compression.

Despite the obvious advantage of saving disk space, a possible disadvantage to using compression is that a file could take longer to load and save.

Note that for some images, such as a noisy scanned image, the compressed image file may in fact be larger than the original. If that is the case and you wish to compress the file, you might try running a light Soften filter over the image before compressing it.

Compression Commands

The following commands allow you to choose compression:

> **<u>Save</u>** or **<u>Save As</u>** (File menu) You can select compression when saving an image in any file format.

> **<u>Batch Convert</u>** (File Menu) You can select compression when converting a quantity of files.

Scanners

Supported Scanners

The following table shows Xoom Photo's supported scanners:

Scanner	Driver Name
Datacopy 730GS	DCP8.DLL
Epson ES 300c	EPSN.DLL
Hewlett Packard Scanjet	HP90.DLL
Hewlett Packard Scanjet Plus	HP95.DLL
Hewlett Packard Scanjet IIc	HP2C.DLL
Howtek Personal Scanner	HPCS.DLL
Microtek MSF-300G	MTK8.DLL
Microtek ScanMaker 600Z	MTKZ.DLL
Mitsubishi SC7500	MB75.DLL
Sharp JX-450	SHRP.DLL
Sharp JX-350	SHP3.DLL
SPIA-compliant scanners	SPIA.DLL

Installing a Scanner

You can install a scanner driver when you first install Xoom Photo, or at any time after installation.

To install a scanner driver when you first install Xoom Photo, follow the installation instructions for this application.

To install a scanner driver at any time after Xoom Photo is installed, first make sure Windows is running and that you know the directory in which Xoom Photo is installed. Place Xoom Photo disk in the disk drive, then:

1. **Open the Run command.** Select the Run option of the File menu of the Windows Program Manager.

2. **Run the Install program.** Type `a:\setup` in the Run dialog box, then click OK. The installation dialog box appears.

3. **Verify Imager directory.** If the directory displayed in the Install To field is not your Xoom Photo directory, click on the Set Location button and enter the correct directory name.

4. **Select the Scanner Driver installation option.** If scan drivers are all you need to install, deselect all but the Scanner Driver option.

5. **Select your Scanner(s).** Click on the Scanners button and select your scanner(s) from the presented list. By default *all* scanners in the list are initially selected. You may install them all, or deselect all but the one(s) you need. When your selections have been made select Continue to return to the Installation screen.

6. **Begin the installation.** Click the Install button in the lower left corner to begin the installation.

The appropriate scanner driver(s) will be copied into Xoom Photo directory. You may be required to insert additional program diskettes; simply follow the instructions issued on the screen.

Scanner-Specific Information

This section contains scanner-specific information for each scanner supported by Xoom Photo. Once you have configured your scanner for use with Xoom Photo, you need not reconfigure it again.

Note: Before you follow these directions, please make sure you have installed the driver for your scanner.

Datacopy 730GS

Configuration automatically detected. Must be connected with a bi-directional parallel cable to an XIS Model 111 interface card.

Epson 300C

Can select I/O port: 278 (LPT1) 378 (LPT2)

Can select light source dropout color (None, Red, Green, Blue)

Hewlett Packard Scanjet or Scanjet Plus

Configuration automatically detected.

Hewlett Packard Scanjet IIc (color)

Configuration automatically detected.

Note: This scanner requires that the file SJII.SYS, which comes with your scanner, must be on your system and called by your system's CONFIG.SYS file. Refer to the documentation that came with your Scanner for more information.

Howtek Personal Scanner

Can set I/O ports: 190h or 200h

Can select light source dropout color (red, green, or blue)

Microtek MSF-300G or ScanMaker 600Z

Can set I/O port; all available options shown.

Mitsubishi SC7500

Can set I/O port from list provided: 100x, 108x, 110x,...3F8

Sharp JX-450 and JX-350

Can set I/O port from list provided: 100x, 108x, 110x,...3F8

DMA channel: 1,3,5,6,7

GPIB ID: 0 to 31

SPIA-compliant scanners

In order for the SPIA.DLL driver to communicate with the scanner, you must first install the SPIA interface (using the driver provided with your scanner). Consult your scanner documentation for specific details.

See also:

Additional Printer Drivers

Overview

Xoom Photo installation diskettes include printer drivers for several additional printers. These drivers should be used instead of those supplied with Microsoft Windows, since these drivers, designed specifically for Xoom Photo, greatly improve printing speed of Xoom Photo files and allow Xoom Photo improved control over the printing process.

These printer drivers are not available under the Windows control panel; they are designed for Xoom Photo only and cannot be used by other Windows applications. These drivers do not use Windows Print Manager.

Two printer drivers are included; one serves for both the Kodak XL-7700 and XLT-7720 printers, and the other for the Kodak SV6500 series and S/P6600 printers.

Kodak XL-7700 and XLT-7720

Selecting the printer

When you select the pair of printers from the Print dialog box, the Imager will automatically detect which printer is attached.

Printer Resolution

The printer's resolution is fixed and cannot be changed by Xoom Photo.

Printer Tables

You can choose Xoom Photo's Use Calibration option to create a calibration file for the printer, and/or you may select one of the 45 distinct printer tables provided with Kodak. Your image is enhanced based upon the information in the selected table.

The printer tables are named according to each table's values. These consist of nine gamma correction values (1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, and 2.8) and five black level values (-40, -30, -20, -10, and 0). Therefore the table named G28BN10.TBL has a gamma correction value of 2.8 and a black level of negative 10. The default printer table is identical to G18B20.TBL.

The tables are provided by Kodak. They have been optimized for the printer. Xoom Photo test strips may be useful for identifying the best printer table for your use.

You can also use the Kodak TableMaker software to modify existing printer tables or create new printer tables. Refer to your Kodak documentation for more information.

The printer tables and Xoom Photo's Printer Calibrations perform similar functions. You may choose either or both, according to your own preference.

To select a new printer table:

1. **Select the Print command.** Open the File menu and select the Print command. The Print dialog box appears.
2. **Select Setup.** The Setup Dialog box appears.
3. **Select Configure.** The Configure Dialog Box appears.
4. **Select Table.** The Load Printer Tables Dialog Box appears.
5. **Specify the Table File.** Specify the desired filename and, if necessary, the drive and directory of

the file you wish to open.

6. **Load the Table File.** Select Load to return to the Configure Dialog Box.

Kodak SV6500 Series and S/P6600 Printers

Printer Setup

The Printer Setup Dialog box allows you to view the printer's resolution, as well as to view and/or change the orientation (portrait or landscape) and number of copies. On the S/P6600 you may select whether or not the image is printed as seen on screen or flipped horizontally, and you can also adjust the image darkness. Also the Configure Dialog box is accessed from the Setup Dialog box.

To view or change the printer setup:

1. **Select the Print command.** Open the File menu and select Print. The Print dialog box appears.

2. **Select Setup.** The Setup Dialog box appears. Note that the printer's resolution is fixed and cannot be changed by Xoom Photo.

3. **Select Orientation.** Portrait is the default.

4. **Select Number of Copies.** The default is one copy. The limit is 100 copies. Unless your printer includes the automatic extractor option, if you select more than one copy, remember to remove each copy from the printer before the next one prints.

5. **(Option available on the S/P6600 only) Select Mirror Image.**

6. **(Option available on the S/P6600 only) Select Darken.** Select this box to darken the printed image.

7. **(Optional) Select Configure.** The Configure Dialog Box, appears. It is described later in this Addendum.

8. **(Optional) Select About.** Selecting About provides information concerning the device driver.

9. **Return to Print menu.** Select OK to return to the Print menu.

Configure Printer

The Configure Printer Dialog box allows you to tell the   Xoom Photo which printer is attached to your system (the Kodak SV6500 or the S/P6600), which port the printer is being used to communicate with the printer, and, for the S/P6600 printers, whether there is paper or transparency media in the printer.

To view or change the printer configuration:

1. **Select the Print command.** Open the File menu and select the Print command. The Print dialog box appears.

2. **Select Setup.** The Setup Dialog box appears.

3. **Select Configure.** The Configure Dialog box appears.

4. **Select Your Printer.** Select the printer (or printer series) that is attached to your system.

5. **Select Printer Port.** Select the LPT port to which your printer is connected.

   Note: If you see an error message that other Windows devices are using the same port, exit the Print Dialog box and then use the Windows Control Panel to remove the other devices from the port.

   Note: After you select the printer port, **do not** use the Windows (or a Windows application) Control Panel to attempt having other devices (or device drivers) use the same port.

6. **(Option available on the S/P 6600 only) Select Transparency.** If transparency media is the printer, check this box.

7. **Return to Setup menu.** Select OK to return to the Setup menu.

XL-7700 and XLT-7720 Hardware Setup

Use a Future Domain or exact compatible SCSI adapter between your computer and your Kodak XLT-7700 or XLT-7720 printer.

The Future Domain adapters supported by Xoom Photo are the following:

TMC-845	
TMC-850	TMC-1660
TMC-860	TMC-1680
TMC-875	MCS-700
TMC-885	MCS-350

Calibrating your Printer and your Scanner

Overview

To compensate for the variations in quality of images due to differences in printers, scanners, and the materials associated with them, you can calibrate your printer(s) or scanner(s). If you save the calibration(s), you can then load them into Xoom Photo each time you use a different scanner or printer, or as your printer toner or ribbon age.

Calibrating your Printer

To calibrate your printer:

1. **Set up your printer.** Make sure the printer configuration, toner, paper, etc., is the way you want it.

2. **Choose a typical image.** Open an image file that represents the typical image you would print on this printer.

3. **Adjust the image.** Use the Color Map menu or the commands on the Ribbon to adjust the image until it is what you consider "perfect" as far as it looks on the display.

4. **Apply the corrections.** Use the Apply command from the Color Map menu. Changes to an image that make the image print correctly may degrade the way it looks on screen. Applying changes at this point makes the display's "perfect" appearance the starting point for printer calibration, so that if the "Use Calibration" box is activated upon printing, both the screen image and the printed image will look as good as possible.

5. **Generate and Print Test Strips to Determine the best Color Map corrections.** Use the Test Strips command of the Image menu to generate test prints. Experiment with the various brightness, contrast, and gamma test strips to determine the Color Map corrections that result in the best print. You may wish to start with the Gamma*Contrast test strip, as many printers, especially dot matrix printers, need both the gamma and contrast boosted for the printed image to appear as it does on screen. You may also wish to experiment with Color Map dialog box corrections.

6. **Make the corrections as you see fit.** Once you have decided which corrections are best, try them one more time with a full-size print of your image. Repeat step 5 until you are satisfied with the end result.

   Note: Do not use the Color Map's Apply command to apply the changes to your image.

   After you complete steps 7 and 8, they will be applied when you print, assuming you activate the Print dialog box's "Use Calibration" box.

7. **Save the calibration to the printer.** Open the Color Map menu and select the Save To command. Select Printer. Select the desired printer. The calibration will be saved to the currently selected printer.

8. **Save the settings as a Look-Up Table (LUT)** Open the Color Map menu and select the Save command. Type a name in the file name dialog box. In addition, type a descriptive name in the field at the bottom of the box. (For example, if you are calibrating for a printer with new toner, type "My Printer, New Toner".) In this way, you can call up the LUT each time your printer is in the same condition.

Each time you print using the currently selected printer in the configuration listed, choose the Use Calibration option of the print dialog box.

Calibrating your Scanner

To calibrate your scanner:

1. **Set up your scanner.** Make sure the scanner configuration is the way you want it.

2. **Scan a typical image.** Scan an image that represents the typical image you would scan.

3. **Adjust the image.** Use the Color Map menu, the commands on the Ribbon, and the various brightness, contrast, and gamma test strips to adjust the image until it is what you consider "perfect" as far as it looks on the display. (Do not use the Color Map's Apply command at this point; it would apply changes to this image only. Once you have completed steps 4 and 5, all new scans will "invisibly" have these corrections applied to them if you activate the Use Calibration box in the Scanner Dialog Box, and you will be able to use the Color Map menu's Load From command for images scanned previously.)

4. **Save the calibration to the scanner.** Open the Color Map menu and select the Save To command. Select Scanner. Select the desired scanner. The calibration will be saved to the currently selected scanner.

5. **Save the settings as a Look-Up Table (LUT)** Open the Color Map menu and select the Save command. Type a name in the file name dialog box. In addition, type a descriptive name in the field at the bottom of the box. (For example, if you are calibrating for using the scanner to scan transparencies, type "My Scanner, Transparencies".) In this way, you can call up the LUT each time your scanner is being used in the same way.

Each time you scan, choose the Use Calibration option of the Scan dialog box to have the image corrected upon scanning.

Xoom Photo Window

Overview

The Xoom Photo Window consists of the following bars and controls:

Bar/Control	Description
Menu Bar	The menu bar displays the menus containing all options for controlling Xoom Photo. The menus include the following:

File	Controls files, scanners, batch conversion, printing
Edit	Alters the image, controls the clipboard
Image	Enhances the image
Color Map	Manipulates the images colors
Window	Controls multiple image windows
Help	Provides access to online help

Bar/Control	Description
Ribbon Controls	The Ribbon is the collection of tools on the left part of the screen. These tools include Brightness, Contrast, and Gamma controls (the up-and-down knob controls), a Frame Creation Tool (the frame with an arrow pointing to it), a Zooming Tool for zooming in and out (the magnifying glasses), a File Open icon (the open file), a Scanning icon (the scanner), and a Panning Tool (the hand).
Status Bar	The Status Bar along the bottom of Xoom Photo Window displays the following information:

Image Size	The width and height of the image in pixels.
Extents	The coordinates of the upper left and lower right corners of the image.
Memory	The amount of free memory in your system.

Bar/Control	Description
Window Control Box	The Window Control box (on the top left corner of every image window) is a standard Windows Control box. The only differences are the final three options on its menu. These are Zoom, Rulers, and Ruler Units.
Text Window of enhancements.	The Text module lets you add text to an image in a variety of fonts with a variety

See <u>Using the Text Utility</u> for more information.

Bar/Control	Description
Retouch Tools	The Retouch tools give you the capability to perform sophisticated paint and

retouch functions to your images. You can paint, draw, add texture, extract colors from an image and copy one portion of an image to another.

See <u>Using the Retouch Tools</u> for more information.

Bar/Control	Description
Retouch Palette	Using the Retouch Palette, you can select foreground and background colors for the Retouch Tools. You can also edit any selected color in the palette in either the RGB or HSV color models.

See <u>Using the Retouch Palette</u> for more information.

See also:
<u>Xoom Photo Procedures</u>

Xoom Photo Window

Procedures

Changing Brightness, Contrast, or Gamma

Creating a Frame within an Image

Sizing and Moving a Frame

Panning an Image

Parking an Image (Image Parking)

Displaying a Ruler Along the Top and Side of an Image

Changing Ruler Units

Zooming in and out of an Image

Zooming with the Window Control Bar

See also:

Xoom Photo Window Overview

Xoom Photo Window

Procedures

Changing Brightness, Contrast, or Gamma

<u>Overview</u>

To change brightness, contrast, or gamma,

1. **Make the image active.** Note that brightness, contrast, and gamma are unavailable for <u>bilevel</u> images.

2. **Move the slider up to increase the factor**

   - or -

   Move the slider down to decrease the factor. The image is updated, and the number under the scroll bar changes accordingly. For brightness and contrast, the scale is 0 to 100. For gamma the scale is .1 to 9.7.

Brightness, Contrast, and Gamma Controls--Ribbon Controls

The Brightness control controls the density of all of the colors (or shades of gray) of the image in the active window.

The Contrast control controls the difference between adjacent colors (or shades of gray) of the image in the active window.

The Gamma control controls the gamma correction curve of the image in the active window. Gamma correction curves compensate for differences in the responses of input and output devices. Selecting a Gamma correction factor changes the contrast in the dark areas of an image. The greater the Gamma value, the greater the boost in dark areas.

The ribbon's brightness, contrast, and gamma controls only work on the luminance of an image. The Color Map dialog box's brightness, contrast, and gamma controls duplicate these controls when the color map is set for the luminance channel.

Frames

A frame is a particular area of interest in an image. Create a frame if you wish to modify only a particular area of the image. All operations except saving are directly affected by the creation of a frame.

Xoom Photo Window

Procedures

Creating a Frame within an Image

<u>Frame Overview</u>

To create a Frame within an image:

1. **Make the image active.**

2. **Select the Frame Creation button.** Click on the button of the Ribbon. The cursor becomes an upside down "L" within the image in the active window.

3. **Size the Frame.** Press and hold the left button to size a frame, dragging the bottom right corner of the frame as you move the cursor. When you release the button, you have an active frame in your image.

Xoom Photo Window

Procedures

Sizing and Moving a Frame

<u>Frame Overview</u>

To size and/or move any Frame:

1. **Display the sizing handles.** Move the cursor near the side or corner of the Frame to display the movement handles.
2. **Size the Frame.** With the left button pressed, drag the handles until the Frame is the desired size.
3. **Display the movement handle.** Move the cursor to the center of the Frame.
4. **Move the Frame**. With the left button pressed, drag the Frame to the desired location.

Xoom Photo Window

Procedures

Panning an Image

<u>Panning Overview</u>

To Pan an image:

1. **Select the Panning Tool.** Click on the Hand icon of the ribbon. The cursor changes to a hand.

2. **Pan the image.** Move the cursor to the image. With the left button pressed, drag the cursor in the direction you want the image moved in the window.

Panning Overview

When an image does not fit entirely in its image window, you may pan the image around in its window with the Panning Tool.

Xoom Photo Window

Procedures

Parking an Image (Image parking)

When you minimize an image, an icon for that image appears on the application's desktop. To maximize the image, double click on the icon.

Xoom Photo Window

Procedures

Displaying a Ruler Along the Top and Side of an Image

To display a ruler along the top and side of an image,

1. **Access the Window Control box.** Click on the square in the upper left corner of the desired image window.

2. **Select the Rulers option.** A ruler will be displayed on the top and left of the image. The units depend on the Ruler Units option.

Xoom Photo Window

Procedures

Changing Ruler Units

To change ruler units,

1. **Access the Window Control box.** Click on the square in the upper left corner of the desired image window.

2. **Select the Ruler Units option.** A submenu appears which allows you to choose between centimeters, inches, or pixels. These units control the Ruler only.

Xoom Photo Window

Procedures

Zooming in and out of a Frame

To zoom in and out of the image,

1. **Select the Zoom In tool or the Zoom Out tool.** (The Zoom In tool is a magnifying glass with a + in it. The Zoom Out tool is a magnifying glass with a - in it.) Click on the Zoom In or Zoom Out icon of the ribbon. The cursor changes to a magnifying glass.

2. **Zoom the image.** Move the cursor to a point in the image. Click the left button to zoom in or out.

Xoom Photo Window

Procedures

Zooming with the Window Control Box

To zoom using the Window control box,

1. **Access the Window control box.** Click on the square in the upper left corner of the desired image window.

2. **Select Zoom.** The list of percentages by which to zoom appears.

File Menu

Overview

Use the File Menu for creating new image windows, bringing images into Xoom Photo, saving images, printing images, and scanning images.

The File menu contains the following commands:

Command	Description
New	Use the New command to create a new image window with the dimensions and resolution of your choice. Although the newly created window does not contain an image, you assign an image type to it for the purposes of pasting images into it. You can create the window, then paste an image, or you can create the window and simultaneously paste the current Clipboard image into it.
Open	The Open command lets you open and display an image file on the screen. You can preview the image file before opening, to load a portion of it or to confirm that it is the image file you wish to open. You can also call up an Info dialog box that contains statistical information about the file.
Open Web	Use this command to open a session on the World Wide Web (Internet).
Close	The Close command removes the active image from the screen.
Save	The Save command immediately saves the active image with its current filename, image class, and compression type (if any). Note that even if a Frame is active, the Save command will save the entire image.
Save As	The Save As command allows you to save an image, or the contents of a Frame, and allows you to change its filename, image class, compression, or halftone type (for bilevel images).
Print	The Print Command allows you to print images as well as your printer can possibly print them. If you have a color printer, Xoom Photo can print them in color. If you have a black and white printer, or just prefer to print in black and white, the Print Command gives you the ability to choose from a number of different halftones.
	You can select between your active printers and select a halftone type, or to use your printer's halftoning method. In addition, the Print dialog box has buttons that access additional dialog boxes for setting up your printer and for positioning the image on the printed page.
Scan	The Scan command allows you to scan images directly into Xoom Photo if you are using a supported scanner. You can also adjust the margins to scan just a portion of your image, select from a variety of scanning methods and set image quality levels (as supported by the selected scanner).
	Xoom Photo also supports "TWAIN" compatible scanner drivers and applications.
Capture	The Capture command lets you set options for a utility that allows you to capture part or all of anything displayed on the screen. The Capture utility is enabled automatically when you run Xoom Photo, or when you run the Screen Capture application included with Xoom Photo.
	When you select the Capture command, or when you run the Screen Capture application, you get a dialog box that contains fields to set up the Capture capability. Once you have set the options, then you need not use the Capture command again until you need to change any options. Instead, whenever you want to capture a screen, in any application, you use a "Hot Key" combination on the keyboard.
	Xoom Photo, or the separate included Screen Capture utility, must be running in order for

the Capture capability to be available. If the "Hot Key combination is in conflict with a "Hot Key" sequence in another application, you can change it using the Capture dialog box.

Batch Conversion Use the Batch Conversion command to convert single or multiple files from their existing file formats, image classes, and compression types to files that have different file formats, image classes, and/or compression types.

For example, you could use this command to convert a directory full of image files of varying types (e.g., 24-bit PCX, 2-bit TIFF, 8-bit GIF, 24-bit Targa, etc.) all to 24-bit TIFF with one command. Or you could use the Batch Conversion command simply to convert one 24-bit TIFF file to a 1-bit IMG (for Ventura Publisher) without bringing the image into a window.

Note that a conversion does not delete the original file.

Merge Select the Merge command from Xoom Photo's File Menu to automatically join together two partial images to form one whole image. The two parts must be of the same image class and they also must have an overlapping view of the middle part of the image.

The most common use of the merge command is for joining together two halves of an image saved as two files. This happens often with scanners that have a narrow scanning width, such as hand scanners.

Merge allows you to join the image in the active workspace either to the image in another workspace or to an image file on disk.

See also How Merging Works.

See also Merge Specifications.

See also Merging Two Image Parts

Exit The Exit command closes all images and, for each image that has been changed, a dialog is presented prompting if you want to save the image.

See also:
File Menu Procedures

How Merge Works

When you tell Xoom Photo to merge two image parts that have an overlapping area in the middle, it does the following:

1. It looks for features in the right side of the left image that are identical or nearly identical to features in the top left part of the right image (i.e., it looks in the area where the two images should overlap).

2. It aligns the points it has found to match, rotating the right image where necessary, vertically stretching or compressing the right image where necessary, vertically stretching or compressing the right image where necessary, and (unless "Draft" is selected or the files are bilevel) it uses a sophisticated smoothing technique on both image parts to correct scanning errors and make the merge appear seamless.

3. It displays the merged image in a new active workspace.

Merge Specifications

The following specifications, in inches, depend on the image dots per inch. As some applications are inconsistent about how DPI is handled, check the Image Info Dialog box to be certain of the DPI of your image parts.

Image Class: The images may be gray scale, true color, or bilevel; they may not be palette images or halftoned images.

Features: The overlapping areas must have enough distinct features in common (e.g., identical rows of "E"s will not merge properly, nor will solid gray in the overlapping area).

Overlap: The overlapping area must be at least 0.5 inches wide and no more than 1.5 inches wide.

Alignment: The difference in vertical alignment of the two image parts must be no more than 0.5 inches.

Stretch: The stretching of one image in relation to the other can be no more than 5%.

> **Note**: Stretching can be introduced by hand scanners when lines are skipped due to uneven scanning speed.

Tilt: The difference in tilt between the two image parts can be no more than 6 degrees.

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See also:

File Menu Overview

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Procedures

Creating an Image Window

To create an image window:

1. **Open the File menu and select New.** The New dialog box appears.

2. **Choose the Image type.**

3. **Set the image size.** Type the desired width and height (in inches), and resolution (number of dots per inch). The Memory field will display the total kilobytes needed to store the image of the chosen width, height, and resolution.

4. **(Optional) Select the Clipboard image.** If there is an image in the Clipboard and you wish to load it in the new window, click on the Clipboard button. The image class is automatically selected.

5. **Confirm the command.** Click the New button to create the window, or click Cancel to cancel the operation.

File Menu

Procedures

Opening a File

To open a file:

1. **Open the File menu and select Open.** The Open dialog box appears.
2. **(Optional) Specify the file format.** Select the file format of the kind of file you are going to open. The list box will display only files of the chosen file format.
3. **Specify the file.** Specify the filename and, if necessary, the drive and directory of the file you wish to open.
4. **Confirm the open.** Click on the Open button (or double click on the filename) to open the file, or click on Cancel to cancel the operation.

File Menu

Procedures

Previewing and Opening a File

To preview and open a file:

1. **Open the File menu and select Open**. The Open dialog box appears.
2. **(Optional) Specify the file format.** Select the file format of the kind of file you are going to open. The list box will display only files of the chosen file format.
3. **Specify the file.** Specify the filename and, if necessary, the drive and directory of the file you wish to open.
4. **Select the Preview option.** A dialog box appears that shows a miniature of the image.
5. **(Optional) Size the Frame.** You can size the Frame by moving the cursor to one of the handles and, then press the left button and drag the cursor to size and stretch the box.

   - **or** -

   Type the desired values for the amounts to clip away in the Clip margins boxes. This will cause Open to load only the area selected. (You can change the units--between pixels and inches--in the Units field).
6. **(Optional) Move the Frame.** Move the box by moving the cursor to the center, then press the left button and drag the mouse until the box is where you want it.
7. **Exit the Preview dialog box.** Select OK to return to the Open dialog box.
8. **Open the image you just previewed.** When you are returned to the Open dialog box, select the Open command or double click on the filename.

File Menu

Procedures

Opening a World Wide Web Session

To open a world wide web session:

> **Select File and the Open Web Session command**. Your web browser opens a world wide web (internet) session.

File Menu

Procedures

Viewing Information about a File

The File Open Info dialog box contains information about the image. The fields are read only, and much of the information within the fields can be edited using the Image Menu's Info Dialog box.

To view information about a file:

1. **Open the File menu and select Open**. The Open dialog box appears.

2. (**Optional) Specify the file format**. Select the file format of the kind of file you are going to open. The list box will display only files of the chosen file format.

3. **Specify the file**. Specify the filename and, if necessary, the drive and directory of the file you wish to open.

4. **Select the Info option**. The Info dialog box appears, displaying the following information: filename, image class, bit depth (Bits/Pixel), dots per inch, width and height (in pixels and inches), size in bytes, and for some file formats, title, artist, date of creation, and comments.

File Menu

Procedures

Closing an Image File

The Close command removes the active image from the screen.

To close an image file:

1. **Make the image active.**

2. **Open the File menu and select Close.**

3. **(Optional) Save the image.** If the image has been changed, you are prompted to save the image to a disk file. If the image is new and has never been saved, you will be prompted to save the file. In either case, if you select Yes from the save dialog, a File Save command is performed before the image window is closed.

File Menu

Procedures

Saving an Image File

To save an image:

1. **Make the image active.**
2. **Open the File menu and select Save.** The image is saved. If the active image file was created with the New command or has no name, selecting Save brings up the Save As dialog box.

File Menu

Procedures

Saving an Image in a Different File Format

To save an image in a different file format:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the desired area.
3. **Open the File menu and select Save As**. The Save As dialog box appears.
4. **Select a name.** Select the name and, if necessary, the directory and drive where you want to save the image file.
5. **(Optional) Specify the file format.** Select the file format in which you wish your image to be saved. The list box will display only files of the chosen file format.
6. **Select a name.** Select the name and, if necessary, the directory and drive where you want to save the image file.
7. **(Optional) Specify the options.** Click on the Options button to bring up additional fields that let you convert the image class, compression type, and (for bilevel images only) halftone options.
8. **Confirm the Save.** Click on the Save button to export the file.

File Menu

Procedures

Printing an Image

Follow this procedure to print an image in its actual position and size on the printer page.

To print:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a frame around the area you wish to print.
3. **Select Print.** Open the File menu and select the Print command. The Print dialog box appears.
4. **Select a halftone method.** If you choose to use the printer halftone, the printer's default method for halftoning will be used. If you select a halftone type from within Xoom Photo, you will also need to select a line screen type.
5. **Start the print.** Click on OK to send the image to the printer.

See also:

Changing Position and Size to Print
Changing the Printer or Printer Setup
Makiing a Multi-page Poster

File Menu

Procedures

Changing Position and Size to Print

The Print Position dialog box not only allows you to place the image at your desired location on the page, it also gives you the ability to resize the image upon printing.

To change position and size then print:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a frame around the area you wish to print.
3. **Select Print.** Open the File menu and select the Print command. The Print dialog box will appear.
4. **Change the position.** Click the Postion button. When the dialog box appears, use the Center button, or use the Top and Left fields to reposition the image on the page.
5. **Size the image on the page.** Use the Width and Height fields or the percentage fields to make the image the size you wish on the printer page. If you click on the Allow Distortion check box, you can stretch or shrink the width without changing the height or vice versa. If you use the Smooth checkbox when you resize, the resized image will be smoothed to make up for pixels that were added or deleted.

   - or -

   Select Fit to Page to automatically change the height and width of the image such that it fills the entire page to the best fit.

   Click OK to exit the Position box.
6. **Select a halftone method.** If you choose to use the printer halftone, the printer's default method for halftoning will be used. If you select a halftone type from within Xoom Photo, you will also need to select a line screen type.
7. **Start the print.** Click on OK to print the image.

See also:

Printing an Image
Changing the Printer or Printer Setup
Makiing a Multi-page Poster

File Menu

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Making a Multi-Page Poster

To make a poster:

1. **Make the image active**.
2. **(Optional) Make a Frame.** Set a frame around the area you wish to print.
3. **Select Print.** Open the File menu and select the Print command. The Print dialog box will appear.
4. **Enable poster printing.** Click the Position button. When the dialog box appears, select the Poster Print check box.
5. **Change the position.** Use the Center button, or use the Top and Left fields to reposition the image on the page.
6. **Size the image on the Page.** Use the Width and Height fields or the percentage fields to make the image the size you wish on the printer page. (If you click on the Allow Distortion check box, you can stretch or shrink the width without changing the height or vice versa.) If you use the Smooth check box when you resize, the resized image will be smoothed to make up for pixels that were added or deleted. Note that smoothing may slow the printing process.

   - **or** -

   Cllick the Fit to Page button to automatically change the height and width of the image such that it fills the entire page to the best fit. Fit to Page always maintains aspect ratio.
7. **Choose the number of tiles.** Use the Pg fields to specify the number of tiles you wish your poster to contain. (For example, 2 tiles horizontally and 3 tiles vertically). Choosing a number of tiles in one direction directly affects the choice in the other direction. If the image you're printing is not strictly square, when you choose a number in one direction, the number in the other direction will change to best fit the print. If you wish to exactly control the number of tiles in each direction, you must select the Allow Distortion option.
8. **(Optional) Choose the tiles to print.** If you wish to print only selected tiles in the poster, first click on the Selected button under the image display. The image will be overlaid with a pattern. Simply click on the tiles you wish printed to uncover them. This option is useful if you need to reprint specific tiles after printing an entire poster. Click on All to print all the tiles.
9. **Select a halftone method.** If you choose to use the printer halftone, the printer's default method for halftoning will be used. If you select a halftone type from within Xoom Photo, you will also need to select a line screen type.
10. **Start the print.** Click on OK to send the image to the printer.

See also:

Printing an Image
Changing Position and Size to Print
Changing the Printer or Printer Setup

File Menu

Procedures

Changing the Printer or Printer Setup

To change the printer or printer setup:

1. **Select the Print command.** Open the File menu and select the Print command. The Print dialog box appears.

2. **(Optional) Select a printer.** If the printer listed is not the one you wish to use, select a new one from the list box.

3. **(Optional) Change the printer setup.** If you wish to choose or change options specific to your printer, click on the Setup button to bring up the Setup dialog box. The options are different for each printer, but options you may change include paper tray, paper size, printing portrait or landscape mode, memory, orientation, resolution, color, and font cartridges.

   Xoom Photo will remember the specified setup the next time the application is run. Other Windows applications will not be affected.

4. **Continue with the Print.** Either continue with a print procedure, or exit the Print dialog box.

See also:

Printing an Image
Changing Position and Size to Print
Makiing a Multi-page Poster

File Menu

Procedures

Previewing an Image Before Scanning

The Scanner Margins dialog box allows you to select the portion of the scanner's page that you wish to scan. You can adjust the margins of the image to be scanned by entering them in text boxes, or by moving the handles of a box over a preview scan of the image.

To preview an image before scanning:

1. **Prepare the scanner.** Make sure the scanner is attached and turned on, and that the image you wish to scan is in the scanner.

2. **Select the Scan command.** Open the File menu and select Scan. The Scan dialog box appears.

3. **Select the Margins option.** Click on the Margins button in the Scan dialog box. The Margins dialog box will appear displaying a small window and the current margins (calculated in inches).

4. **Preview the scanning area. (Flatbed scanners only)** Click on the Preview button to display the scanning area in the display window. (**Note**: the Preview image will be gray scale even if your current scan setting is color.)

5. **(Optional) Adjust the margins.** Change the margins by typing the desired new values in the fields (flatbed scanners only),

   - or -

   Use the Frame handles to adjust the margins.

6. **Return to the Scan dialog box.** When the margins are the way you want them, click OK to return to the Scan dialog box.

See also:

Scanners
Calbrating Your Scanner
Scanning an Image

File Menu

Procedures

Scanning an Image

To scan an image:

1. **Prepare the scanner.** Make sure the scanner is attached and turned on, and that you have prepared the image you wish to scan.

2. **Select the Scan command.** Open the File menu and select Scan. The Scan dialog box appears.

3. **Select a Scanner**. First, select the class of scanner, TWAIN or HALO, you are using. Then click the Select button and choose your scanner from the displayed list.

4. **(Optional) Change Scanner Setup.** Click on the Setup button. **Note** - this option is only available when HALO scanners are active. See Changing the Scanner Setup for more information.

5. **(Optional) Adjust the Margins.** Click on the Margins button. See below for detailed procedures in adjusting the margins before a scan. **Note:** This option is only available when scanners are active.

6. **(Optional) Select "Use Calibration."** Select this option if you have created, and would like to use, a previously created scanner calibration.

7. **(Optional) Select "Convert Halftone to Gray."** Select this option when you want to convert a halftone image into a gray scale image. During this conversion Xoom Photo examines your image on a 6x6 pixel basis, and replaces each 6x6 cell with the appropriate, single-pixel, gray shade (this conversion will reduce the dimensions of your image by about 80%).

8. **Start the Scan.** Click on the Acquire button. (**Note** - If you are using a TWAIN-class scanner, you are taken into its scanning application at this point. Please refer to your manufacturer's User Manual for scanning instructions).

    If you are using a HALO-class scanner, and:

    You are using a flatbed scanner, the image is scanned and displayed in a new window in Xoom Photo.

    You are using a hand scanner, a progress indicator appears. Press and hold the scan button on the side of the scanner and drag it *slowly* across the image to be scanned (most hand scanners will warn you if you drag too fast - see your manufacturer's User Manual for details). If your scanned result is distorted or has portions "dropped out," try rescanning at a slower speed.

See also:

Scanners
Calbrating Your Scanner

File Menu

Procedures

Changing the Scanner Setup

Scanner Setup allows you to select the type of scan (e.g., bilevel, halftone, color, etc.), and make image quality/size adjustments as allowed by your scanner.

Note: The Setup command is only available when HALO scanners are active.   If you are using a TWAIN scanner, please refer to your manufacturer's User Manual for setup procedures.

To change the scanner setup:

1. **Select the Scan command.** Open the File menu and select the Scan command. The Scan dialog box appears.

2. **Select your Scanner**. First, select the class of scanner, TWAIN or HALO, you are using. Then click the Select button and choose your scanner from the displayed list.

3. **Change the Scanner Setup.** Click on the Setup button.

   If you are using a flatbed scanner, a dialog box for your particular scanner will appear. The options presented will depend upon the type of scanner you are using. Options you may see include the following: DPI (dots per inch), gamma correction, threshold (level where grays or colors become black or white for bilevel printing), brightness, monochrome or color, bit depth, halftone type, and black/white reversal. Make your choices, then select OK to return to the Scan dialog box.

   If you are using a hand scanner, the Setup option updates information based on switch settings on the scanner itself. In general, you should access this dialog box, *then* adjust the switches on your scanner. Once your switch settings are correct, select OK to return to the Scan dialog box.

See also:

Scanners
Calbrating Your Scanner

File Menu

Procedures

Capturing a Screen using Xoom Photo

To capture a screen using Xoom Photo:

1. **Run Xoom Photo.** Double click on Xoom Photo in the Xoom Photo program manager window.

2. **(Optional) Set the options.** Open the File menu and select the Capture command. Set the following options:

   File Format - Choose the format in which you want the captured file to be saved.
   Destination Directory - Choose the directory to which the captured images should be saved.
   Selection - Choose from the following: "Screen" (the entire screen), "Window" (the active window, including the window's frame), "Client" (everything inside the active window, without the frame), and "Area" (an area which you define with the cursor at capture time).
   File Template - Enter the filename prefix you want Xoom Photo to use when it stores your captured images. The default prefix is GRAB.
   Capture Cursor - Click this check box to capture the cursor with the screen.
   Hot Key - The key combination you want to use to capture screens.

3. **Switch to the other application, but leave the Screen Capture application running**.

   Note: If you are capturing the screen of a DOS application (i.e., a non-Windows application), please see Capturing a DOS Image.

4. **Set the screen.** Make the screen look the way you want it to be captured.

5. **Press the Hot Key combination.** The cursor will turn into a camera while the screen is being captured. (If you have specified to capture a Frame area, the cursor will first turn into a Crosshair. Press the left button and keep it pressed, as you size the capture area down and to the right. When you release the button, the cursor becomes a camera and the capture begins.) When the cursor returns to normal, the capture is complete, and the file has been created.

File Menu

Procedures

Capturing a Screen using the Screen Capture Application

To capture a screen using the Screen Capture Application:

1. **Run the Screen Capture application.** From the Window menu in Xoom Photo, select the Screen Capture option.

2. **(Optional) Set Capture the options.** Open the File menu and select the Settings command. Set the following options:

   File Format - Choose the format in which you want the captured file to be saved.
   Destination Directory - Choose the directory to which the captured images should be saved.
   Selection - Choose from the following: "Screen" (the entire screen), "Window" (the active window, including the window's frame), "Client" (everything inside the active window, without the frame), and "Area" (an area which you define with the cursor at capture time).
   File Template - Set the filename prefix you want Xoom Photo to use when it stores your captured images. The default prefix is GRAB.
   Capture Cursor - Click this check box to capture the cursor with the screen.
   Hot Key - The key combination you want to use to capture screens.

3. **Switch to the other application, but leave the Screen Capture application running.**

   Note: If you are capturing the screen of a DOS application (i.e., a non-Windows application), please see Capturing a DOS Image.

4. **Set the screen.** Make the screen look the way you want it to be captured.

5. **Press the Hot Key combination.** The cursor will turn into a camera while the screen is being captured. (If you have specified to capture an Area, the cursor will first turn into a Crosshair. Press the left button and keep it pressed, as you size the capture area down and to the right. When you release the button, the cursor becomes a camera and the capture begins.) When the cursor returns to normal, the capture is complete, and the file has been created.

File Menu

Procedures

Capturing a Screen from a DOS Application

Although Xoom Photo has been specifically designed to capture Windows applications, you *can* capture a DOS screen if it is presented in a special way within Windows (**Note:** DOS screens cannot be captured outside of Windows).

To capture a screen from a DOS application:

1. **Run the Screen Capture application.** If it is not already active, start the Screen Capture application Windows menu or from the File menu.

2. **Set the Selection option to "Area."** From the Selections list select Area (do not select Window or Client; DOS applications *cannot* be captured in these modes).

3. **Activate your DOS application *in a window*.** Xoom Photo <u>cannot</u> capture a DOS application in Full Screen Mode. To put your DOS application in a window, start the application, then press ALT+ENTER. Your DOS screen will be placed in Windows-mode.

4. **Minimize all other active applications.** Click the minimize button (the down arrow in the upper right corner of the application's window) on every other open application, *including the Program Manager.* When this is complete, your DOS screen should be the only visibly active window; all others should be suspended as icons against the Window's background screen.

5. **Highlight the Program Manager icon.** Xoom Photo cannot capture the DOS window if it is active. To de-activate it, click <u>once</u> on the Program Manager icon. This will pop-up its control menu. <u>Do not</u> select an option from this menu. Simply clear it by clicking anywhere on the background screen (except on another icon). This will remove the menu, but leave the Program Manager active (and, thereby, deactivate the DOS application window).

6. **Press the Hot Key combination.** Your cursor turns into a crosshair. Position the cursor in the upper-left corner of the DOS window, then press and hold the left mouse button, dragging it down to the lower-right corner of your image. When the lower-right corner is positioned, release the button, and the image will be captured.

   If you want to return to Full Screen mode following the capture, press ALT+ENTER.

File Menu

Procedures

Converting One or More Files with Batch Conversion

To convert one or more files with Batch Conversion:

1. **Select the Batch Conversion command.** Open the File menu and select Batch Conversion. The batch conversion dialog box appears.

2. **Select the Source Directory.**

3. **Select the Destination.** Change the Destination directory to the one in which you wish the converted files to be saved. This directory can be the same as the source directory.

4. **Set the conversion options.** Select a format, then select an image class. If the format you selected supports compression, select compression type. If you select bilevel, select halftone options.

5. **Select the file(s) to convert.** Click on the file or files you wish to convert. You can choose as many files as you wish.

6. **Click the convert button.** The files you chose will be converted one by one and saved in the directory you specified. If you are converting files in the same directory that have the same extension, you will be warned before the conversion occurs.

File Menu

Procedures

Merging Two Image Parts

To merge two image parts:

1. **Select the Merge Command.** Open the File menu and select Merge. The Merge dialog box appears.

2. **Select the image to be merged with the active workspace image.**
    Either:
    Select a file from the file selection box on the left (change directories if necessary with the directory selection box in the middle of the dialog box),
    - or -
    Select a workspace (other than the current workspace) from the Workspaces selection box on the right.

3. **Select OK** This brings up the Merge Settings Dialog box.

4. **(Optional) Select a Feature Size.** Merge compares features in the partial images. Usually, stay with the default feature size of Small. However, if you try to merge an image and you see an error message such as "unable to find points", try again with a different features size, and make sure to use Pre-Align (described below). If most of the features in the image are small (12-point type or less), the feature size should be small. If most of the features are large (as in photographic images or 36-point type or above), a large feature size may work best. If your feature sizes are in between, select Medium.

5. **(Optional) Select Draft.** Unless Draft is selected, a sophisticated mathematical technique called bilinear scaling is used to smoothly merge the right side image with the left. If Draft is selected, pixel replication or decimation is used instead to smooth out the merge. On slow machines, selecting Draft may quicken the merge process. For photographic images, it is usually best not to select Draft. For bilevel images, selecting Draft has no effect.

6. **(If Necessary) Select Swap.** If your current workspace contains the right part of the image, click on Swap so that the left part of the image is on the left and the right part of the image is on the right.

7. **(Optional) Select Pre-Align.** In general, using Pre-align is unnecessary unless an error message appears when you try a merge without it. Selecting Pre-Align allow you to select a position where both image parts match, giving Merge a head start in finding matching points. An example of the Pre-Align Dialog box is show in Figure. Note that unless your two image halves can fit unmagnified in the dialog box, enlarged views of the top center of the image (i.e., the top of the areas that should overlap) are presented.

8. **(If Necessary) Select Swap**. This produces the same effect as the Swap button on the Merge Settings Dialog box, described above.

9. **Select Alignment Positions.** Choose a feature common to both images, for example a bold capital letter in a text file or a button on a shirt. Move the square, see-through marker over the common feature in both views. Select OK to return to the Merge Settings Dialog box.

10. **Select Merge from the Merge Settings Dialog box.** A progress indicator is displayed while the two image parts are joined to form a new image.

See also:

How Merging Works.
Merge Specifications.

File Menu

Procedures

Exiting Xoom Photo

To exit Xoom Photo:

Select Exit. Open the File menu and select the Exit command. If no windows are open, the application closes. If image windows are open, you are prompted whether to save them before the application closes.

Edit Menu

Overview

Use the Edit Menu for undoing Xoom Photo editing changes, cutting out parts of images, pasting cut or copied images or parts of images, or imported images.

The Edit Menu contains the following commands:

Command	Description
Undo	The Undo command cancels a previous operation. Xoom Photo lets you cancel up to the last three operations.
Remove Frame	The Remove Frame command lets you delete a frame in an image.
Copy	The Copy command takes the active image, or the area designated by a Frame, and copies it to the Windows Clipboard, leaving the original area unchanged.
Copy As	The Copy As command, like the Copy command, takes the active image, or the area designated by a Frame, and copies it to the Clipboard, leaving the original area unchanged. The difference is that the Copy As command allows you to convert the image before copying.
Cut	The Cut command takes the active image, or the area designated by a Frame, copies it to the Clipboard, and then clears the area that was copied (changing it to white).
Paste	The Paste command takes the contents of the Clipboard and places it in the active window.
Paste From	The Paste From command pastes a file from disk into your active image.
Preferences	Select the Preferences command of the Edit menu to access a dialog box that lets you set the general preferences and the eraser brush preferences.
Paste Options	The paste options control how pasting an image or portion of an image affect the destination image.

See also:

Edit Menu Procedures

General Preferences

You can set the number of Undo buffers, the speed of the progress indicator tracking, the delay rate of balloon help and whether or not it shows, and you can also switch the background image repainting capability on and off.

Eraser Brush Preferences

The Eraser Brush preferences are as follows:

Allow Undo with Eraser Brush -If this item is on, a special undo buffer is created. When you then select Undo while using the Retouch tools, you can perform the Undo with a brush on a specific area, rather than having the entire process undone.

Right Button Usage - Select whether to use the right button to extract color from the image, or to undo the last brush operation.

Cursor - Select whether to display the Brush outline (the actual representation of the brush results) as the cursor, to show the representation of the Brush as the cursor, or both.

Texture Button - Click this button to change the active texture file.

Edit Menu

Procedures

See also:

Edit Menu

Procedures

Using Undo (Cancel a previous operation)

To cancel your previous operation or either of the two operations before that:

1. **Select Undo.** Open the Edit menu and select Undo. A submenu appears describing the last operation or up to the last three operations.

2. **Select the operation you wish to Undo.** If more than one are displayed, you may select which operation you wish to Undo.

   Undo returns the image to its state prior to the command you are undoing. For example, let's say you first use the Sharpen filter and then use the Edge and Sculpt effects, in that order. If you then Undo Sharpen, all three effects are undone. If, instead, you Undo Edge, both Edge and Sculpt are undone. If you Undo Sculpt, only Sculpt is undone.

   The next time the Undo submenu is accessed, it will allow you to select to Redo an Undone operation.

   You can set the number of <u>levels of Undo</u> through the Preferences command of the Edit menu.

Edit Menu

Procedures

Changing the Undo Level Setting

To change the Undo level setting:

1. **Select the Preferences command.** Open the Edit menu and select Preferences. The Preferences dialog box appears.

2. **Choose an Undo level.** In the Image Undo buffers drop down selection box, choose None, 1, 2, or 3. The Undo level will remain the same until you change it again.

Edit Menu

Procedures

Removing a Frame

To remove a frame from an image:

Open the Edit menu and select the Remove Frame command. The frame in the image disappears.

Edit Menu

Procedures

Copying an Image or the Contents of a Frame

To copy an image or the contents of a frame:

1. **Make the image active.**
2. **(Optional) Make a Frame**. Set a Frame around the area of the active image you wish to copy.
3. **Open the Edit menu and select Copy**. The image, or area within the Frame will be copied to the Clipboard.

The contents of the Clipboard can then be pasted.

Edit Menu

Procedures

Converting and Copying an Image or the Contents of a Frame

To convert and copy an image or the contents of a frame:

1. **Make the image active.**
2. **(Optional) Make a Frame**. Set a Frame around the area of the active image you wish to copy.
3. **Open the Edit menu and select Copy As**.
4. **Specify the new class.** Select the class to which the image is to be converted.
5. **Specify the halftone options.** If you are converting to bilevel, select the line screen, line style, and output DPI.
6. **Confirm the Copy As.** Click the OK button to begin the conversion and copying. The image, or area within the Frame will be copied to the Clipboard.

The contents of the Clipboard can then be pasted.

Edit Menu

Procedures

Cutting an Image or the Contents of a Frame

To cut an image or the contents of a frame:

1. **Make the image active.**
2. **(Optional) Make a Frame**. Set a Frame around the area you wish to cut.
3. **Open the Edit menu and select Cut**. The image, or area within the Frame will be copied to the Clipboard.

The contents of the Clipboard can then be pasted.

Edit Menu

Procedures

Pasting an Image from the Clipboard

To paste an image from the clipboard:

1. **Choose the destination.** Make the image into which you wish to paste the active image.
2. **Open the Edit menu and select Paste.** The Clipboard image is first placed in the upper left portion of the active image.
3. **Move the area.** With the left mouse button pressed, drag the Clipboard image where you want it in the image.
4. **Set the Paste and remove the frame.** Click the right mouse button to set the pasted area in the image and remove the frame.

To cancel the paste:

Press the ESC key before setting the paste, or paste the image and then use the Undo command of the Edit menu.

Note: If the image being pasted is larger than the current workspace, the pasted image is cropped (from the bottom and right) to fit the workspace.

See also:

Pasting Between Image Classes

Edit Menu

Pasting Between Image Classes - Legal Combinations of Pasting Image Classes

You cannot paste between all image classes. In some cases, you must first convert the image to the new class (by using the Copy As command of the Edit menu), then paste the Clipboard into your image.

The following table shows the legal combinations of pasting image classes.

FROM: Clipboard	TO Bilevel Image	Gray Scale Image	Palette Image	True Color Image
Bilevel	Yes	Yes	Yes	Yes
Gray Scale	No	Yes	Yes	Yes
Palette	No	Yes	Yes	Yes
True Color	No	Yes	Yes	Yes

If the area being pasted is larger than the active workspace, the paste will be cropped to fit the workspace.

If you are bringing an image from the Clipboard from another application, you can only paste it into the same image class. The best way to bring it into another image that is not the same image class is to create a New image of the same image class as the image on the Clipboard and then paste the Clipboard into the new image. You then convert the new image to the image class of the target, and recut the image to the Clipboard and paste it into the image.

See also:

Image Classes: Overview, Commands, and Considerations
What is an Image?

Edit Menu

Procedures

Pasting an Image from a File into an Image

To paste an image from a file into an image:

1. **Choose the destination.** Make the image into which you wish to paste the active image.
2. **Open the Edit menu and select Paste From.** The standard File Open dialog box appears. You can use the <u>Preview</u> portion of the File Open dialog to choose the portion of the file to paste from.
3. **Select the File to Paste.** Choose the file you wish to paste. The image file is first placed in the upper left portion of the active image.
4. **(Optional) Move the area.** With the left mouse button pressed, drag the Clipboard image where you want it in the image. Click the right mouse button outside the Clipboard area to paste the image.

The same limitations for pasting Clipboard files apply for pasting disk files.

Edit Menu

Procedures

Changing Paste Options

To change paste options:

1. **Select the Paste Options command.** Open the Edit menu and select Paste options. The Paste Options dialog box appears.

2. **Change the options.**
    Source/Destination - Controls the degree to which the copied area blends into the new area. The larger the source number, the more opaque the copied area, and vice versa
    Paste - **All** (over all pixels), **On Lighter Only** (over pixels whose values are brighter (greater) than the copied area, or **On Darker Only** (over pixels whose values are darker (lower) than the copied area.

3. **Set Preview With Options** - If this item is on, then when you perform a paste, you can preview it and see how it appears with the above-mentioned options. If this item is off, the preview of the paste may be faster.

4. **Apply with options** - If this item is on, then when you perform a paste, the paste will be applied with the above-mentioned options. If this item is off, then when you perform a paste, the options are ignored.

Edit Menu

Procedures

Setting Progress Indicator Tracking Speed

You can set the speed at which the progress indicator tracks, thereby affecting the speed of foreground and background tasks.

To change the Progress Indicator Tracking speed:

1. **Select the Preferences command.** Open the Edit menu and select Preferences. The Preferences dialog box appears.

2. **Choose a Progress Update rate.** In the Progress Update Rate box, enter a number from 1 to 1000 (milliseconds). If the number is low, more time will be allotted to background operations. If the number is high, more time will be allotted to the task being tracked by the progress indicator.

Edit Menu

Procedures

Turning Background Image Repainting On and Off

To turn background image repainting on and off:

1. **Select the Preferences command.** Open the Edit menu and select Preferences. The Preferences dialog box appears.

2. **Choose whether to repaint background images.** Check the Repaint Background images on or off, depending upon your preference. Choosing not to repaint background images can speed performance, as only the active window will be repainted.

Image Menu

Overview

Use the Image Menu to enhance or modify the appearance of your image. You may also add, change, or view information about the image

The Image Menu contains the following commands:

Command	Description
Filter	Filters may be used to improve an image's appearance. You may sharpen fuzzy images, soften images that have harsh edges, and make images that are splotchy appear less so. Note that the speed of a selected filter is directly related to the size of the image. If you have edited the Color Map and then wish to apply a filter, the filter will ignore the changes in the Color Map unless they are first applied. The filters work only with gray scale or true color images.
Effects	Select Effects to bring up a menu of special effects you can perform on an image. Note that with the exceptions of Pixelize and Negative, effects can be used only with true color and gray scale images. Negative can be used for all images, and pixelize can be used for all images but bilevel.
Test Strips	Select Test Strips to make test strips for gamma, brightness, and contrast; combinations of gamma*brightness, gamma*contrast and brightness*contrast; and halftones.
Merge	Use the Merge command to combine workspaces containing separated color planes. You can merge the planes exactly as they were separated, or can merge each plane as another plane.
Separate	Use the Separate command to produce color separations, that is, to separate the image into color planes. You can either separate the image into Red, Green, and Blue planes, or Cyan, Magenta, Yellow and Black planes.
Fill	Use the Fill command to fill a portion or the entire image with a color, hue, pattern or texture.
Rotate	Use the Rotate option to rotate a portion or the entire image to a precise degree.(Note that you can perform a quick rotation 90 degrees to the left or right using the Orientation command of the Image menu.)
Resize	Select Resize to create a copy of the active image at a new size of your choice.
Reduce Colors	Use the Reduce Colors command to optimize, or reduce the number of colors in the palette of the image. You can do this either with the M/Color method (which will use a fixed standard 256-color palette for all images), or by the Median method (in which you select the number of colors and the start and end points). The M/Color fixed palette allows combination of many images on one screen. In Median, the application selects the best colors to make up the desired palette.
Convert To	Use the Convert To command to convert the active image to another image class.
Orientation	Use the Orientation command to rotate your images or flip them in various directions. (Note that the Rotate Left and Rotate Right options of this command

differ from the Rotate command of the Image menu. If you wish to rotate to a more precise degree than in 90 degree increments, use the Rotate command).

Crop/Matte   Use this command to either create a white matte around your image or to crop your image.

You can crop away unwanted borders of your image such that the resulting image is rectangular or elliptical in shape. For square cropping, you can specify the style and size of the corners of your image.

Duplicate   Use the Duplicate command to make an exact duplicate of an image in a new workspace.

Info   Select Info to bring up a dialog box containing information about the image in the active window. (This is the same dialog box that appears when you select Info from either the Open or Import dialog boxes of the File menu, but you can edit information in it when it is called from the Image menu).

See also:
Image Menu Procedures

Image Menu

Procedures

See also:

Image Menu

Procedures

Sharpening an Image

The sharpen filter increases the contrast along the edges of an image. Reapplying the filter has a cumulative effect. That is, the more times you apply the sharpen filter, the sharper it becomes.

To sharpen an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area of the active image you wish to filter.
3. **Select the Sharpen filter.** Open the Image menu and select Filter, then select Sharpen.
4. **Vary the degree to which the image is sharpened.** Move the scroll box. The sharpen range varies from 0 (weak) to 10 (strong).
5. **Begin the filter.** Press OK to accept the displayed strength and begin filtering the image. A progress indicator is displayed while the image is being filtered.

Image Menu

Procedures

Softening an Image

Select the soften filter to soften the edges of an image. Reapplying the filter has a cumulative effect. That is, the more times you apply the blur filter, the softer and more blurred the image becomes.

To soften an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area of the active image you wish to soften.
3. **Select the Soften filter.** Open the Image menu and select Filter, then select soften.
4. **Vary the strength of the Soften filter.** Move the scroll box. The range of soften strengths vary from 0 (weak) to 10 (strong).
5. **Begin the filter.** Press OK to accept the displayed strength and begin softening the image. A progress indicator is displayed while the image is being filtered.

Image Menu

Procedures

Despeckling an Image

Select the Despeckle filter to remove unwanted noise or patterns from an image.

To despeckle an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area of the active image you wish to despeckle.
3. **Select the Despeckle filter.** Open the Image menu and select Filter, then select Despeckle.
4. **Choose the speck size.** Select a small, medium, or large speck size for removal.
5. **Choose the sensitivity level.** Move the scroll block to choose how much of a color change is needed before an object is considered a speck for removal.
6. **Begin the despeckle.** Press OK to accept the size and sensitivity and begin filtering the image. A progress indicator is displayed while the image is being despeckled.

Image Menu

Procedures

Using the Edge Effect

Edge detects edges in the image and gives the image an outline effect. Edge can be used only with gray scale and true color images.

To use the Edge Effect:

1. **Make the image active.**

2. **(Optional) Make a Frame.** Set a Frame around the area you wish to Edge.

3. **Select the Edge effect.** Open the Image menu, then select Effects, then select Edge.

4. **Select the edge:**
    Thin (detects all edges and traces with a thin line)
    Thick (detects all edges and traces with a thick line)
    Horizontal (detects and traces horizontal edges)
    Vertical (detects and traces vertical edges)

Image Menu

Procedures

Performing a Sculpt

The Sculpt option highlights and heightens shadows in the image, in most cases giving the effect of changing the direction of a distant lighting source aimed at the image. The three-dimensional effect produced usually makes the image look like a relief sculpture.

Sculpt can be used only with gray scale and true color images.

To perform a sculpt:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you wish to Sculpt.
3. **Select the Sculpt effect.** Open the Image menu, then select Effects, then select Sculpt.
4. **Select the "lighting" direction:**
   Left Above
   Left
   Diagonal
   Metal (to give the appearance of being sculpted in metal)

Image Menu

Procedures

Performing an Emboss

The Emboss option highlights and heightens shadows in the image, making the image appear as if it were embossed.

Emboss can be used only with gray scale and true color images.

To perform an emboss:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you wish to Emboss.
3. **Select the Emboss effect.** Open the Image menu, then select Effects, then select Emboss.
4. **Select the "embossing" direction:**
   Above
   Left
   Diagonal

Image Menu

Procedures

Performing a Lines Effect

The Lines option is an edge detection operation that will detect horizontal and vertical lines (or both), but will ignore any lines at a diagonal, or on a curve.

Lines can be used only with gray scale and true color images.

To perform a lines effect:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area in which you wish to trace lines.
3. **Select the Lines effect.** Open the Image menu, select Effects, then select Lines.
4. **Select the lines you wish to trace:**
   Horizontal
   Vertical
   Both

Image Menu

Procedures

Pixelizing an Image

Select Pixelize to reduce the apparent resolution in the image. An image is made up of tiny pixels which, from a distance, look like a uniform image. The Pixelize option combines pixels, giving the effect of very large pixels (or kernels), the size of which you specify. You also have the option of protecting one or two color planes that will not be pixelized.

Note: Pixelize cannot be used with bilevel images.

This option can be used for purposes such as blurring a face in a photograph to prevent identification, or to create abstract artistic effects.

To pixelize an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you want to pixelize.
3. **Select the Pixelize effect.** Open the Image menu, then select Effects, then select Pixelize.
4. **Specify the number of pixels to combine.** Choose numbers both vertical and horizontal. (For example, if you choose 2 for horizontal, and 1 for vertical, you will get kernels 2 pixels wide and 1 pixel high.)
5. **(Optional) Protect color plane(s).** For true color images, you can protect one or two separate planes from pixelization.
6. **Start pixelization.** Select OK to begin the pixelization process.

Image Menu

Procedures

Posterizing an Image

Select Posterize to reduce the number of shades in a true color image or the number of gray shades in a gray scale image. This gives a poster-like effect to either gray scale or true color images. You also have the ability to protect one or two colors in a true color image, so that a protected color will continue to have its full complement of shades, while unprotected colors will have fewer shades. Posterize is unavailable for bilevel or palette images.

To posterize an image:

1. **Make the image active.**

2. **(Optional) Make a Frame.** Set a Frame around the area you want to posterize.

3. **Select the Posterize effect.** Open the Image menu, then select Effects, then select Posterize.

4. **Specify the resampling number.** Choose number of bits to use to determine the number of shades.
   1 bit = 2 shades
   2 bits = 4 shades
   3 bits = 8 shades
   4 bits = 16 shades
   5 bits = 32 shades
   6 bits = 64 shades
   7 bits = 128 shades

5. **(Optional) Protect color plane(s).** For true color images, you can protect one or two separate planes from posterization.

6. **Start posterization.** Select OK to begin the posterization process.

Image Menu

Procedures

Making a Negative

Select Negative to create an inverse of the image. In true color images, you also have the ability to protect one or two color planes, so that a protected plane will not be affected. Negative is unavailable for bilevel or palette images.

To make a negative:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you want to invert.
3. **Select the Negative effect.** Open the Image menu, then select Effects, then select Negative.
4. **(Optional) Protect color plane(s).** For true color images, you can protect one or two separate planes from the negative process.
5. **Start the negative process.** Select OK to begin the process. The new effect is displayed in the original window.

Image Menu

Procedures

Making a Brightness, Contrast, Gamma, or 2-Pair Combination Test Strip

To make a brightness, contrast, gamma, or 2-pair combination test strip:

1. **Make the image active.**

2. **Select the desired Test Strips command.** Open the Image menu and select the Test Strips command. From the menu select brightness, contrast, gamma, or a combination. The Test Strips dialog box appears.

3. **Specify the number of images.** Type the number of images you wish to display in both the horizontal and vertical directions. (For example, if you choose 2 horizontal and 3 vertical, you will see 6 images.)

4. **(Optional) Select a color plane.** Choose whether to test the gamma and/or brightness and/or contrast on the desired color plane.

5. **Specify the image size.** Type the size you wish for images in the test as a percentage based on the original image size. (For example, if you want each image one fourth the original size, type 25%) Your choice here depends on the size of the original image. If the image is very large, you may want to reduce the image size considerably to avoid creating a very large image on disk.

6. **Choose ranges.** Type the starting and ending brightness, and/or contrast and/or gamma value for the range of test images. The test strip will show an even spread of values based on the number of test images you chose.

7. **Create the Test Strip.** Select OK to generate the test strip. A progress indicator is displayed while the test strip is generated. The new image is displayed in a window labeled "Untitled n" where n is the number of the currently created image (in other words, it is "1" if no previous images have been created by Xoom Photo).

8. **Evaluate the test strip.** If you are testing to determine the best changes for printing, print the Test Strip image. Otherwise, make your evaluations visually.

Test Strips

A Test Strip is a single image that contains several reduced copies of your image, each of which has some degree of brightness, contrast, or gamma correction (or combination) change, or halftone patterns.

Use Test Strips to help determine the best choice in changing brightness, contrast, gamma correction, or applying different halftone patterns. This can save you time in testing prior to printing an image. Once you have generated and evaluated a test strip, you can make the appropriate changes to the brightness, contrast, or gamma through the Ribbon controls, or through the Color Map menu. You can make appropriate changes to the halftone either in converting the image, or when you send it to print

Image Menu

Procedures

Making a One Halftone Type/All Screens Test Strip

You can generate a test strip that will show what your image would look like if it were converted to bilevel (by converting, saving, or printing). Each halftone type has four screen types associated with it. You can choose to view all variations of screens for one halftone type, or one screen each for all the halftone types.

To make a halftone Test Strip that shows all screen variations of one halftone type:

1. **Make the image active.**

2. **Select the Halftone Test Strips command.** Open the Image menu and select Test Strips command. From the menu, select Halftone. The Halftone Test Strips dialog box appears.

3. **Choose color or bilevel.** Specify whether you wish the test to be a color or bilevel halftone.

4. **Specify the image size.** Type the size you wish for images in the test as a percentage based on the original image size. (For example, if you want each image one fourth the original size, type 25%.) Your choice here depends on the size of the original image.

5. **Choose the option for one halftone type.** Click the button for Select Type, Use All Screens in the upper left corner of the dialog box.

6. **Choose a Halftone Type.** From the list in the lower left of the dialog box, choose the halftone type you wish to test.

7. **Specify the Output DPI.** Type the output DPI in the field in the lower right corner of the dialog box.

8. **Create the Test Strip.** Select OK to generate the test strip. A progress indicator is displayed while the test strip is generated. The new image is displayed in a window labeled "Untitledn" where "n" is the number of untitled images that have been created. The new image will be four miniature versions of the image, each represented at a different line screen for the Halftone type and DPI selected.

9. **Evaluate the test strip.** If you are testing to determine the best changes for printing, print the Test Strip. Otherwise, make your evaluations visually.

Image Menu

Procedures

Making a One Halftone per Screen Test Strip

You can generate a test strip that will show what your image would look like if it were converted to bilevel (by converting, saving, or printing). Each halftone type has four screen types associated with it. You can choose to view all variations of screens for one halftone type, or one screen each for all the halftone types.

To make a halftone Test Strip that shows all screen variations of one halftone type:

1. **Make the image active.**
2. **Select the Halftone Test Strips command.** Open the Image menu and select Test Strips command. From the menu, select Halftone. The Halftone Test Strips dialog box appears.
3. **Choose color or bilevel.** Specify whether you wish the test to be a color or bilevel halftone.
4. **Specify the image size.** Type the size you wish for images in the test as a percentage based on the original image size. (For example, if you want each image one fourth the original size, type 25%.) Your choice here depends on the size of the original image.
5. **Choose the option for One Screen.** Click the button for Select Screen, Use All Types in the upper left corner of the dialog box.
6. **Choose a Halftone Type.** For each halftone type, you will need to choose a screen size or type. From the scroll box in the lower right of the dialog box, choose a halftone type.
7. **Choose a Screen**. From the four screens listed in the lower right of the dialog box, choose the one you want to test with the Halftone type you selected.
8. **Repeat Steps 6 and 7 for each halftone type in the scroll box.**
9. **Specify the Output DPI.** Type the output DPI in the field in the lower right corner of the dialog box.
10. **Create the Test Strip.** Select OK to generate the test strip. A progress indicator is displayed while the test strip is generated. The new image is displayed in a window labeled "Untitled." The new image will be six miniature versions of the image, each represented at the DPI selected, and at your specified line screen size for each Halftone type.
11. **Evaluate the test strip.** If you are testing to determine the best changes for printing, print the Test Strip image. Otherwise, make your evaluations visually.

Image Menu

Procedures

Merging Color Planes

To merge color planes:

1. **Select the Merge command.** Open the Image menu and select Merge. The merge dialog box appears.

2. **Select the color planes.** Choose whether the color planes are to be merged exactly as they were separated, or switch planes.

3. **Confirm the Merge.** Select OK. The planes will be merged and the result is placed in a new workspace.

Image Menu

Procedures

Separating an Image into Color Planes

To separate an image into color planes:

1. **Make the image active.**
2. **Select the Separate command.** Open the Image menu and select Separate.
3. **Select the color model.** Select whether you wish to separate into R,G, and B or C,M,Y, and K. New workspaces are created each containing one of the separated planes.

Once an image is separated, you can save or print each plane to later merge. See the Merge command for details on how to merge color separations.

Image Menu

Procedures

Filling an Image

To fill an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you want to change.
3. **Select the Fill command.** Open the Image menu and select Fill. The Fill dialog box appears.
4. **Select the Fill method**. From the Fill field, select whether to fill with a pattern, a texture, a color, or a hue.

   If you select texture or pattern, select the Texture/Pattern button at the bottom of the dialog box to access a file to be used as the texture or pattern.

   If you select color or hue, use the Fill Options area to select whether to use the currently active foreground color, background color, white, or black.
5. **Set the transparency factor.** Select the degree of transparency you wish to fill.
6. **Confirm the Fill.** Select OK. A progress indicator will be displayed as the image is being filled.

Image Menu

Procedures

Rotating an Image

To rotate an image:

1. **Make the image active.**
2. **(Optional) Make a Frame.** Set a Frame around the area you want to change.
3. **Select the Rotate command.** Open the Image menu and select Rotate. The Rotate dialog box appears.
4. **Select the angle of rotation.** Type in the desired angle of rotation in the field in the upper left corner of the dialog box.
5. **Choose a rotation direction.** Choose whether to rotate in the left direction or in the right direction.
6. **Select the rotation origin.** Choose whether to rotate about the center, the upper or lower left or right corners.
7. **Confirm the rotation.** Select OK to begin the rotation. The image or selected portion is rotated according to the specifications, and overwrites the current image information.

See also:

Changing Image Orientation

Image Menu

Procedures

Resizing an Image

To resize an image:

1. **Make the image active.**

2. **Select Resize.** Open the Image menu and select the Resize command. The Resize dialog box appears.

3. **Select the size.** Type the desired width and height, or select the size change in terms of a percentage of the original image. You can specify the units with the Units option, where your choices are either pixels or the Windows default length unit (cm or inches). Note that changes will be proportional and the image will be scaled unless you allow distortion.

4. **(Optional) Allow.** If you want the new image to fit into a size and are not concerned whether it is proportioned exactly to scale of the original, select the Allow Distortion option, then make size changes.

5. **(Optional) Enable smoothing.** If you select the Smooth option, bilinear scaling is used in resizing the image.   This is a form of resizing that takes into account adjacent pixel values to generate in-between values for the resized image, so that the new image does not look as if pixels were arbitrarily removed or added.   When this option is not selected, scaling is done using pixel replication (for enlargement) and decimation (for reduction).

6. **Resize the image.** Select OK to begin the resizing. A progress indicator will be displayed as the image is resizing. The new image appearx in a box labeled "Untitled"; the original image will be unchanged.

Image Menu

Procedures

Reducing Colors in an Image

To reduce colors in an image:

1. **Make the image active.**

2. **(Optional) Make a Frame.** Set a Frame around the area you are going to optimize.

3. **Select Reduce Colors.** Open the Image menu and select the Reduce Colors Command. A dialog box appears.

4. **Choose a method.** Choose either <u>Median</u>or <u>M/Color</u>. If you choose Median you can then choose the number of colors you wish in the palette, as well as the beginning and ending numbers.

5. **Confirm the optimization.** Click OK to start the optimization. A progress indicator is displayed during the process. When the process is through, the new image appears in a window labeled "Untitled."

Image Menu

Procedures

Converting Image Classes

To convert the image in the active window:

1. **Make the image active.**
2. **Select the Convert command.** Open the Image menu and select Convert To. The Convert dialog box appears.
3. **Specify the new class.** Select the image class to which you wish your image be converted.
4. **Specify the halftone options.** If you are converting to bilevel, select the line screen, line style, and output DPI.
5. **Confirm the Convert.** Click on the OK button to begin the conversion process. A progress indicator is displayed while the image is being converted. The new image appears in a new window; the original image remains unchanged.

See also:

Image Classes: Overview, Commands, and Considerations

Image Menu

Procedures

Changing Image Orientation

To change image orientation:

1. **Make the image active.**

2. **(Optional) Make a Frame.** Set a Frame around the area you want to change.

3. **Select the desired change:**

   Rotate Left (90 degrees)
   Rotate Right (90 degrees)
   Mirror (Left to Right)
   Invert (Top to Bottom)
   Transpose (Left to right and top to bottom)

4. **Begin the change.** Select OK to start the orientation change. The new image is displayed in a new image; the original image remains unchanged.

See also:

Rotating an Image

Image Menu

Procedures

Cropping an Image

To crop an image:

1. **Make the image active.**

2. **Select the Crop/Matte command.** Open the Image menu and select the Crop/Matte command. The Crop/Matte dialog box appears.

3. **Choose to crop round or square.** If you choose round, the resulting image will be round. If you choose square, the resulting image will be rectangular, though you can specify corner styles.

4. **Choose a corner style.** If you chose a square crop, you can choose whether to make the corners cut, rounded, straight, dog-eared, or filleted.

5. **Specify the corner size.** A corner, whether cut straight, or rounded or filleted, is based on trimming away at a diagonal to the corner of the image. The number you type in the Corner Size field will determine the distance from the corner to the endpoints of the diagonal.

6. **Start the Crop.** Select OK to begin the Crop. A progress indicator is displayed. The cropped image is displayed in a new window; the original image is unchanged.

Image Menu

Procedures

Adding a Matte Around an Image

To add a matte of white around an image:

1. **Make the image active.**

2. **Select the Crop/Matte command.** Open the Image menu and select the Crop/Matte command. The Crop/Matte dialog box appears.

3. **Specify the Matte size.** Type in the amount of white space you want on the left, right, top, and bottom of the image. You can change the measuring units (between pixels and the Windows default unit of length--either cm or inches) in the Units field.

4. **Start the Matte.** Select OK to begin the Matte. A progress indicator is displayed. The matted image is displayed in a new window; the original image is unchanged.

Image Menu

Procedures

Duplicating an Image

To duplicate an image:

1. **Make the image active.**

2. **Select the Duplicate command.** Open the Image menu and select the Duplicate command. A new untitled workspace is created with a copy of the selected image displayed. The original image is unchanged.

Image Menu

Procedures

Viewing or Editing Information about an Image

To view or edit information about an image:

1. **Make the image active.**

2. **Select Info.** Open the Image menu and select the Info command. The Info dialog box appears displaying the following information. filename, image class, bit depth (Bits/Pixel), dots per inch, width and height (in pixels and inch), size in bytes, and for some file formats, title, artist, date of creation, and comments.

3. **(Optional) Edit the information.** Information that can be changed in this box includes the following: dots per inch, title, artist, date of creation, and comments. Note that if you change the dots per inch, the size in inches is changed.

Color Map Menu

Overview

Commands in the Color Map Menu are a combination of powerful tools for fine-tuning your image. The menu gives you the ability to visually adjust the Color Map. While you are making changes, you have the ability to see, for any point on your image, the index values for each pixel before editing and after.

When the Color Map dialog box is displayed, it reflects the change made to the active images. If you switch images, the Color Map dialog box settings change to those reflective of the active image.

The Color Map Menu contains the following commands:

Command	Description
Load	Color Map operations affect only the viewable image via a <u>Look-Up Table (LUT)</u>, not the "base image" stored in memory, until you choose the Color Map menu's Apply command. This allows color map corrections to be viewed more quickly, and lets you to store Color Map changes in LUTs that can be applied to other images or used for calibrations.
	You can load a LUT that had been saved from another image that contains Color Map adjustments. In this way, you can load a pre-saved set of adjustments so that you do not have to manually adjust the image.
	You can also load a LUT to be saved to the current scanner or printer as the calibration file.
Save	After you adjust the Color Map, you can save the changes in the form of a LUT, so that you can use the same adjustments for another image. Thus, you can determine color map settings that would work for similar images, and save the effort of adjusting each image.
	The Save command is also used to save a calibration LUT for a printer or scanner. In this way, you can determine the necessary Color Map changes for a particular printer or scanner. (Compare this with the Save As command.)
Load From	You can load the existing default LUT from a scanner or printer and make adjustments to it, then save it back to the scanner or printer, or save it as a different Look Up Table.
Save To	You can save a set of Color Map adjustments as a LUT to the current printer or scanner that will be used as a calibration table each time you print or scan.
Apply	Changes to the color map are not a permanent part of the image unless they are applied.
Optimize	You can adjust the Color Map of an image by automatically "stretching" the histogram. The contrast of the image is optimized, or made more even across the image.
Reset	You can reset any changes made to the Color Map to all channels, or to one specific channel, or to the curve.
Show Map	The Color Map is a dialog box that displays options for editing the color map, as well as for selecting the color model and channel.
Show Text	The Show Text command is a dialog box that lets you choose the text font, font size, font spacing, and font style (for example, bold, italic, or drop shadow).
Show Histogram	A histogram is a function that measures the contrast and brightness in an image. In Xoom Photo, a histogram is a two-dimensional grid where each value along the X-axis represents a color or gray scale index and each value along the Y-axis

represent the number of pixels in the image that are of that index. In general, observing the histogram gives a clue as to what contrast enhancements will improve the viewability of the image.

Show Palette   The Show Palette dialog box shows a gradient of colors and contains buttons for foreground and background colors.

See also:
Color Map Menu Procedures

Color Map Menu

Procedures

Loading a LUT (Look Up Table)

Saving a LUT

Loading a LUT from a Printer or Scanner

Saving a LUT to a Printer or Scanner

Applying a Color Map

Optimizing an Image

Resetting Changes

Displaying the Color Map Dialog Box

Viewing a Histogram of an Image

Editing an Image's Color Map

Editing the Color Map Curve

Monitoring the Pixel Index Values

Viewing the Original Display

Changing the Color Model

See also:

Color Map Menu: Overview

Color Map Menu

Procedures

Loading a LUT (Look Up Table)

To load a LUT to be used in an image:

1. **Make the image active.**

2. **Load a LUT.** Open the Color Map menu and select the Load command. The Load dialog box appears. Choose the desired LUT. The active image will assume the change. (**Note**: To make the changes a permanent part of the image, you must apply them.)

Color Map Menu

Procedures

Saving a LUT (Look Up Table)

To save a LUT:

1. **Make changes to an image.** Open an image and make the desired changes to the Color Map.

2. **Save the LUT.** Open the Color Map menu and select the Save command. Type the desired file name for the LUT, then select OK. If you are saving the LUT to use in calibration, type a descriptive name in the field at the bottom of the box. (For example, if you are calibrating for a printer with low toner, you could type "Printer Low Toner." The LUT can then be called up at any time using the Load command of the Color Map menu.)

Color Map Menu

Procedures

Loading a LUT (Look Up Table) from a Printer or Scanner

To load a LUT from a printer or scanner:

Open the Color Map menu and select the Load From command. The current default LUT will be loaded into Xoom Photo.

You can then make edits and save it back to the scanner or printer.

Color Map Menu

Procedures

Saving a LUT (Look Up Table) to a Printer or Scanner

To save a LUT to a printer or scanner:

1. **Load the LUT into Xoom Photo.** Open the Color Map menu and select Load. Choose the desired LUT.

2. **Save the LUT to the printer or scanner.** Open the Color Map menu and select Save To. If you are saving to printer, select Printer; if you are saving to scanner, select Scanner. From the list box, select the printer or scanner, respectively.

The LUT is saved as the default LUT for the printer or scanner, and each time you use the scanner or printer and select Use Calibration, the LUT will be used.

If you wish to change the default LUT you either need to repeat this process with a different LUT, OR load the current default LUT back into Xoom Photo (using the Load From command of the Color Map menu) and edit it.

When printing with Use Calibration selected, the saved LUT is applied internally before it goes to the printer; thus it will not affect the way the image looks on screen.

When scanning with Use Calibration selected, the saved LUT is applied to the image before it is displayed on screen. Because the LUT is applied internally, all color map controls are set to their home positions once the scanned image is displayed.

Color Map Menu

Procedures

Applying a Color Map

To apply a color map:

1. **Make the image active.**
2. **Make the Color Map adjustments.** Using the Show Map command, make the desired changes.
3. **Apply the map.** Open the Color Map menu and select the Apply command. The changes are made to the image. Note that the controls are reset.

Color Map Menu

Procedures

Optimizing an Image

To optimize an image:

1. **Make the image active.**

2. **(Optional) View the histogram.** Open the Color Map menu and select Show Histogram. The 2-D graphical representation of the histogram will be displayed in a window. You would want to view the histogram to see the current state of the image, and possibly to monitor the changes as they occur.

3. **Optimize the image.** Open the Color Map menu and select Optimize. The contrast of the image is changed. If you have the histogram displayed, you can see the change.

Color Map Menu

Procedures

Resetting Changes

To reset changes:

1. **Select Reset.** Open the Color Map menu and select the Reset command.
2. **Select what you wish to reset.** Select All to reset changes to all channels; select Curve to reset changes to the active curve; select one channel to reset changes to a specific channels.

Color Map Menu

Procedures

Displaying the Color Map Dialog Box

To display the color map dialog box:

1. **Make the image active.**

2. **Select Show Map.** Open the Color Map menu and select the Show Map command. The Color Map dialog box appears.

3. **Make editing changes.** See <u>Editing an Image's Color Map</u> for details on editing a color map.

While the Color Map dialog box is open, you can move between it and the active image if you wish to scroll the image or zoom to a particular area.

Color Map Menu

Procedures

Viewing a Histogram of an Image

To view a histogram of an image:

1. **Make the image active.**

2. **Select the Show Histogram command.** Open the Color Map menu and select Show Histogram. The Histogram dialog box appears.

3. **Select a channel.** Choose whether to view the luminance, or a selected channel.

4. **(Optional) View the Base histogram.** The Base histogram is the histogram before editing changes. If you wish to monitor the changes as they occur, select Base. Then, as changes are made, the Base will be visible along with the changes.

5. **(Optional) View the accumulated histogram.** You can choose to view the accumulated histogram. An accumulated histogram, like an ordinary histogram, displays pixel count for a given index. However, the accumulated histogram also displays the number of pixels with a lesser value.

Color Map Menu

Procedures

Editing an Image's Color Map

To edit a color map:

1. **Make the image active.**
2. **Select the Show Map command.** Open the Color Map menu and choose Show Map. The Color Map dialog box will appear displaying options for changing the color map of the active image. Note that when the Color Map dialog box is active, the brightness, contrast, and gamma controls of the Ribbon are still available, controlling the luminance channel, as usual.
3. **(Optional) color models.** Change the color model from RGB (red, green, blue) to CMY (cyan, magenta, yellow) using the color model box.
4. **(Optional) Select a channel to edit.** Use the Channel option to select whether to edit the luminance, or a particular channel (red, green, or blue, or cyan, magenta, or yellow depending on whether you are in RGB or CMY color model) channel. Each channel is handled independently.
5. **(Optional) Select units.** Use the Units option to switch between pixel and percentage. If you choose percentage, then the curve's Highlight and Shadow values represent percents by which you are changing the curve. For other curve types, the Curve's In and Out values represent, respectively, the percentage point on the curve you are changing and what percentage point you are changing it to. If you choose pixel, for Highlight and Shadow, the values represent the color indexes, from 0 to 255, to which you are changing the highlight (the old 255 value) and shadow (the old 0 value). For other curve types, the In and Out values represent, respectively, the color index you are changing and what you are changing it to. The Units option also changes the pixel color component values that are displayed when you use the Pixel Monitor between actual color components (0 to 255) of Red, Green, and Blue, or percentages of the Red, Green, and Blue color components.
6. **(Optional) Set a grid.** Turn a grid on to use in editing. If you selected pixels as units, the grid will be 16 x 16; if you selected percentage, the grid will be 10 x 10.
7. **Adjust the brightness, contrast and/or gamma.** Type the desired number (or use the spin buttons) in the desired field, then press the TAB key, or move to another box. Repeat this procedure for B (brightness), C (contrast), and/or G (gamma) as desired. Note that, unlike the B, C, and G commands on the Ribbon, the B, C, and G controls in the Color Map dialog box can work on any channel as well as the luminance.
8. **Change the Color Map curve.** Use the Curve type to select which curve to edit, then manually adjust it.
9. **Repeat steps 7 and 8 until the image is the way you want it.**

When the image is "perfect" in your eyes, you can minimize or close the Show Map dialog box and continue with other operations. Note that the Color Map changes are not a part of the displayed image, and that if you wish to perform operations directly on the image after you have adjusted the Color Map, you must first Apply the changes.

See also:

Monitoring the Pixel Index Values

Editing the Color Map Curve

Color Map Menu

Procedures

Editing the Color Map Curve

To edit the color map curve:

1. **Begin editing the Color Map.** Follow the procedures for <u>Editing a Color Map</u> for performing any desired editing other than to the curve.

2. **Choose a Curve.** From the Curve Type field in the Color Map dialog box, choose a curve type:
   Highlight & Shadow - Gives you control over the highest and lowest points of the curve. Note that by making the curve vertical, you are effectively creating a bilevel image for the selected channel, with the threshold value the location of the vertical line.
   1/4 tone - Gives you five control points along the curve to adjust.
   1/8 tone - Gives you nine control points along the curve.
   Composite - Shows the map after cumulative changes. For example, if you edit the highlight and shadow, then 1/4 tone, if you select Composite, you'll see the result of all of the editing. You can edit the Composite curve in a free form fashion.

3. **Edit the Curve.** If the curve has "handles", move the cursor to a handle, and, with the left button pressed, move it vertically or horizontally. Each handle gives you control over the range between the handles to the left and right of the chosen handle. In 1/4 tone and 1/8 tone, the endpoints control highlight and shadow. If you chose composite, you can edit the curve in a free form fashion.

Color Map Menu

Procedures

Monitoring the Pixel Index Values

While the Color Map dialog box is open and you are editing the color map, you can monitor the input (before any correction) and output (after correction) values of a pixel in the image to see if changes are being made accurately.

To monitor the Pixel Index Values:

1. **Begin editing the image.** Follow the steps for accessing the color map dialog box and begin editing the image.

2. **Select the Pixel monitor.** Place the cursor over the Pixel monitor icon in the lower right corner of the Color Map dialog box. Depress the left button and keep it depressed. The cursor will change to resemble the icon.

3. **Move to the pixel you wish to monitor.** Holding the left button down, move the cursor to the desired pixel in the Color Map display window. The input and output values for each component in the pixel will be displayed. If the units are in percentages, the values will be displayed in terms of what percent of the value is displayed (ranging from 0% to 100% in each of the three color channels). If the units are in pixels, the values will be displayed in terms of what color indexes make up each component in the pixel (ranging from 0 to 255 in each channel). Release the button to end pixel monitoring.

See also:

Editing a Color Map

Editing a Color Map Curve

Color Map Menu

Procedures

Viewing the Original Display

In the Color Map dialog box, you can quickly and simply switch at any time during the editing process to a view of the image before corrections were made.

To view the original display:

1. **Begin editing the image.** Follow the steps outlined above to access the color map dialog box and begin editing the image.

2. **Change the Image Display.** Click on the Image Display option in the lower left corner of the Color Map dialog box. From the two choices, choose Original. The display switches to the way it was before any corrections were made. The corrected view returns to the display when you exit the dialog box, or you may switch to it by choosing Current.

3. **Exit the dialog box.** To return to editing mode, exit the dialog box.

Color Map Menu

Procedures

Changing the Color Model

You can change the current color model of the active image, whether you intend to make color map changes through the Color Map menu or whether you intend to perform any operation involving separate channels.

To change the color model:

1. **Make the image active.**
2. **Select the Show Map command.** Open the Color Map menu and select the Show Map command. The Color Map dialog box appears.
3. **Change color models.** In the Color Model field, choose either RGB or CMY.

Once the color model is changed, all operations involving separate channels will work upon red, green, and blue or cyan, magenta, and yellow, depending upon the color model chosen.

Window Menu

Overview and Procedures

The Window menu is a standard Window menu through the system. It allows you to tile the images, cascade the images, close all images, and select which image is the active image.

Use the Window Menu to tile, cascade, and close images, and select which image is active. In addition, the Options in the Window Menu to show and hide the Retouch tools, the Gallery, the Text Module, and the Palette.

The bottom part of the Window Menu shows the name of all images, with the active image checked.

The Window menu contains the following commands:

Command	Procedure
Tile Images	To display all image windows in the window, select Tile Images.
	Open the Window menu and select Tile Images. Image windows are resized so that all images are at least partially visible.
Cascade Images	To "stack" the image windows within the window, select Cascade Image. All displayed images will be shown one on top of the other with their upper left corners showing.
Close All	To close all the windows open in Xoom Photo, select Close All. If any windows contain images that are unsaved, you will be first prompted to save them.
Arrange Icons	To arrange icons in Xoom Photo, choose Arrange Icons.
Screen Capture	Choose Screen Capture to capture a screen in Xoom Photo.

GLOSSARY

A
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--A--
Active Window
Angle dot screen

--B--
Bilevel
Bit
Bit Depth
BMP (File format)
Brightness

--C--
Calibration
Channels
CCITT
Class See Image Class
CMY
Color Correction
Color Reduction
Compression
Contrast
Conversion See Image Conversion
Copy
Crop
Cut
CUT (File format)

--D--

Active Window

The image window that you have currently selected. If only one image window is displayed on the screen, it is the active window.

Angle dot screen

A technique for representing gray tones through dots of varying sizes placed at regular intervals on a grid. The distance between the dots on the grid is the resolution in dots per inch (DPI). The positions of the dots on the grid fall on two sets of imaginary lines at 90 degrees to one another. In Xoom Photo, the angle of these imaginary lines to the horizontal is 45 degrees which is the conventional angle in printing processes using the screen technique.

Bilevel

A 1-bit image. Bilevel images contain two shades: black and white. Bilevel images are also known as line art.

Bit

The smallest unit of information recognized by a computer. A pixel is represented by one or more computer bits. The number of bits per pixel directly determines the number of colors or gray shades that can be represented. See Bit Depth.

Bit Depth

The number of bits per pixel. A 1-bit pixel can represent two shades: black and white. A 4-bit pixel can represent 16 colors or shades of gray. An 8-bit pixel can represent 256 colors or shades of gray. A 24-bit pixel can represent 1.67 million colors.

BMP

Internal bit-mapped format used by Windows and OS/2. Xoom Photo supports 1-, 4-, 8-, and 24-bit variants of BMP.

Brightness

The amount of white in an image. The brighter the image, the more white shown, and, as brightness is increased, each color in the image is shifted more toward white.

Calibration

The process of setting Color Map attributes to compensate for the variations in quality of images due to differences in printers, scanners, and the materials associated with them. You can calibrate your printer(s) or scanner(s), save the calibration(s), then load them into Xoom Photo each time you use a different scanner or printer, or as your printer toner or ribbon age.

Channels

Portions of the information that produce perceived color in an image file. The channels most frequently referred to in Xoom Photo are luminance and the intensities or Red, Green, and Blue, with luminance being the intensity irrespective of color.

CCITT

Group 3 or Group 4 Fax compression - Facsimile compatible, Huffman run-length encoded compression for 1-bit images. Group 4 is a more advanced version of Group 3, but both are conceptually the same.

CMY

Color model in which each color is composed of varying degrees of Cyan, Magenta, and Yellow. CMY is the standard color model used in printing.

Color Correction

Making changes to brightness, contrast, color, highlight, shadows in an image to enhance compensate for perceived deficiencies.

Color Reduction

Optimization, or reducing the number of colors in the palette of an image. Methods of reduction supported in Xoom Photo include M/Color and Median.

Compression

Mathematical technique that allows an image to be stored with less memory. Redundancies in image make-up of the image are identified, given a code, and the data in the redundancies is replaced by the code.

Contrast

The sharpness of an image. The higher the contrast in an image the larger the difference between white and black in the image, or (in color images) the more spread out the color range is. As contrast is increased, all the colors or gray shades in the image spread apart.

Copy

To make a copy of a portion of an image, send it to the Windows Clipboard, and leave the original unchanged. See also Cut.

Crop

To cut away unwanted portions of an image and zero in on only the portion of interest. Imager gives the following options for cropping in image's corners: square, round, cut, fillet, and ear.

Cut

To remove a portion of an image, send it to the Windows Clipboard, and replace it with white. See also Copy.

CUT (file format)

Developed by Media Cybernetics, it is the main file format of the popular Dr. Halo paint package. Xoom Photo supports 8-bit CUT.

Despeckle (filter)

Removes unwanted noise or patterns from an image.

Dots Per Inch (DPI)

This is a unit of measure for resolution. DPI can refer to the resolution of the displayed image, or the output page. The output DPI does not necessarily map one-to-one to the image DPI. The number of dots per inch in a document determines its visible quality. A higher resolution document can appear smooth, realistic, and finely defined. A lower resolution document can appear blotchy, jagged, and ragged. See also Spatial Resolution.

Drag

To press and hold down a button on your pointing device while you move the cursor on the screen. You "drag" something when you want to move it to a new location on the screen, or when you want to resize it. For example, you drag a document window to reposition or resize it.

Edge (special effect)
Detects and emphasizes all edges in an image, giving an outline effect.

Emboss

Highlights and heightens shadows in an image, in most cases giving the effect of changing the direction of a distant lighting source aimed at the image. The three-dimensional effect usually makes the image look embossed.

Error Diffusion

A digital process that uses black and white dots to simulate gray shades. Error diffusion is one method of rendering a gray scale document on a black and white output device.

File

An image that you load from or save to disk.

File Format

The method with which an image is stored to disk, based on image class, compression type (if applicable), and halftone pattern (for bilevel images). Xoom Photo can work with images in these file formats: TIFF, IMG, MSP, CUT, GIF, BMP, PCX.

Frame

A part of an image surrounded by a frame border. If a frame is active, operations on the image will only affect the area within the frame. Contents of the frame may be cut or copied to the Clipboard, or sent to the printer.

Gamma (Curve)

A mathematical curve that compensates for differences in how images are output. Selecting a gamma factor will change the contrast in the dark areas of the image. The higher the gamma value, the greater the boost in dark areas.

GIF (file format)

Graphics Interchange Format, developed by Compuserve, Inc. Xoom Photo supports 1-, 2-, 4-, and 8-bit variants of GIF.

Gray Scale

A gray scale document contains more than one bit per pixel, and therefore more than two shades. A gray scale document, like a high-quality black and white photograph, contains white, black and intermediate gray shades.

Gray Value (gray level)

In gray scale images, the brightness value assigned to a pixel. In an 8-bit image, this value ranges from 0 to 255 (from black, through shades of gray, to white).

Halftone

Method of representing color or gray scale images with regularly spaced black dots.

Horizontal Differencing

Technique used for enhancing <u>LZW</u> compression. Horizontal differencing takes advantage of the fact that, in many images, the difference between adjacent pixels is frequently 0 or a small number. Instead of compressing the actual value, LZW then compresses the differencing values of the adjacent pixels.

Icon

A symbol that represents a tool or item. For example, the symbols on the Ribbon are icons of the available tools.

Image

The "document" that Xoom Photo works upon. Also may refer to the original artwork, graphics, or photo that you scan or import.

Image Class

Image category, determined by bit depth. Image classes supported by Xoom Photo include bilevel (1-bit), palette (8-bit), gray scale (8-bit) and true color (24-bit).

Image Conversion

The process of changing an image from one class and/or format and/or compression type to another.

Image Parking Area

A scrolling region in the lower left corner of Xoom Photo window that is used to keep any images that have been minimized.

Image Processing

Applying digital functions which improve clarity or quality of an image. Image processing functions available for use in Xoom Photo include filtering (sharpen, smooth, despeckle), and special effects (edge, emboss, lines, pixelize, posterize, pixelize, and negative).

IMG (File format)

Developed by Digital Research, and used extensively by Ventura Publisher. Xoom Photo supports 1-bit IMG.

Invert

Flipping an image from top to bottom.

Landscape Mode

Printing mode in which the image is printing at a 90 degree orientation to the printed page.

Lines (special effect)

Detects and emphasizes edges of lines in the horizontal and vertical direction.

Lossless

Type of compression that allows full recovery of the original image and is fully reversible.

Lossy

Type of compression that degenerates an image during compression and is not fully reversible.

Luminance

Intensity irrespective of color (i.e., average intensity of all colors).

LUT (Look Up Table)

LUTs are used with the Color Map Menu. Color Map operations affect only the viewable image via a LUT, not the base image stored in memory, until you choose the Color Map menus Apply command. This allows color map corrections to be viewed more quickly, and lets you store Color Map changes in LUTs that can be applied to other images or used for calibrations.

LZW (Lempel-Zif)
Compression type named after the individuals who created it. LZW maps a translation table into common patterns in adjacent pixels across a row. LZW compression can be further enhanced by horizontal differencing.

Matte

Additional white space around the edge of an image.

M/Color

Optimization (color-reduction) technique uses a fixed standard 256-color palette.

Median

Optimization (color reduction) technique in which you select the number of colors and the start and end points. In Median, the application selects the best colors to make up the desired palette.

Mirror (Orientation)

Flipping and image from left to right.

Modified Huffman

Compression type which is a variation on **RLE**. Modified Huffman uses a standard table of patterns that represent typical patterns in an image. These tables are usually tuned to the type of data they are used to compress.

MSP (file format)

Developed by Microsoft Paint. Xoom Photo supports 1-bit MSP.

Output Format

An image's output format determines how it will be rendered at its final destination, what resolution it will have, and what dimensions it will have.

Palette

8 -bit image class. Pseudocolored image in which each pixel can be one of 256 colors, determined by a palette.

Paste

A command that lets you place the contents of the Windows Clipboard or an entire file another area of the active image, or in another image.

PCX (file format)

Developed by ZSoft Corporation. Xoom Photo supports 1-, 4, 8-, and 24- bit PCX.

Pixel

The smallest element in a document displayed or printed.

Pixelize

Combines pixels in an image, giving the effect of larger pixels.

Portrait Mode
Printing mode in which the image is printed "normally" on the printed page.

Posterize

Reduces the number of shades in a true color or gray scale image, giving a poster-like effect.

RGB

Color model in which each color is composed of varying degrees of Red, Green, and Blue.

Ribbon

A graphic bar along the left side of Xoom Photo window that displays icon controls for Frame creation, zooming, and adjustments to brightness, contrast, and gamma.

Resize

To reduce or enlarge an image's size. Xoom Photo performs advanced image processing during resizing operations to ensure the best possible result through smoothing.

RLE (Run Length Encoding)

Compression scheme whereby a count is associated with a pixel value to take advantage of the repeating pixel values. For example, a line of 250 gray pixels would be RLE encoded by the number 250 followed by the numerical value for Gray.

Rotate

> To change the orientation of an image so that it is at a 90 degree angle to its original position.

Sculpt (special effect)

Highlights and heightens shadows in the image, in most cases giving the effect of changing the direction of a distant lighting source aimed at the image. The three-dimensional effect produced usually makes the image look like a sculpture.

Sharpen (Filter)

A digital process that intensifies edges and details in an image by increasing the difference between gray values of neighboring pixels. Sharpen produces a crisper image.

Smooth

Bilinear scaling option that may be used during printing and resizing.   This is a form of resizing that takes into account adjacent pixel values to generate in-between values for the resized image, so that the new image does not look as if pixels were arbitrarily removed or added.   When this option is not selected, scaling is done using pixel replication (bigger) and decimation (smaller).

Soften (Filter)

A digital process that softens edges and details in an image by averaging the gray value of neighboring pixels. Smooth produces a softer image.

Spatial Resolution

Image attribute defined by a two-dimensional (width and height) grid of pixels.

Test Strip

One single image that contains a collection of miniatures of an image which have varying degrees of change applied. Test strips can be generated for halftone, brightness, contrast, gamma, or any combination thereof.

Threshold

A digital process that uses a 50% cutoff point to convert all gray shades to black or white. You can modify the effect of Threshold by adjusting the brightness of the image.

TIFF (File Format)

A general purpose file format recognized as a standard for image files. TIFF, in all its variants, is the native, standard file format for Xoom Photo.

Tile

One page panel in a multi-page poster-size print.

TGA (File Format)

TARGA file format, developed by TrueVision Inc. Xoom Photo supports 8- and 24- bit TGA.

Transpose

Flipping an image from top to bottom and left to right.

True Color

24-bit color. Image class in which each pixel contains 256 shades each of red, green, and blue; therefore, the image can contain up to 16.7 million colors.

WORKING WITH OTHER APPLICATIONS

The ability to move images back and forth between Xoom Photo and other applications is one of the more significant features of Xoom Photo.

Ami Pro

CorelDRAW!

Microsoft Word for Windows

PC Paintbrush for Windows

See also:

What Image File Formats Can I Use?

Working with Other File Formats

WORKING WITH OTHER APPLICATIONS

Ami Pro

From Xoom Photo to Ami Pro:

Ami Pro will read bilevel, gray scale, or palette images either from the Clipboard or a file. Specifically, it will read the following file formats:
TIFF (uncompressed bilevel, RLE or Group 3 compressed bilevel, all gray scale variants, all palette variants)
PCX (bilevel)

The Add a Frame command must be used to first set a position for the image.

If you use the Ami Pro Import command, you can perform a limited amount of image processing functions within the application

From Ami Pro to Xoom Photo:

Ami Pro images cannot be imported or pasted into Xoom Photo.

WORKING WITH OTHER APPLICATIONS

CorelDRAW!

From Xoom Photo to CorelDRAW!:

CorelDRAW! will read bilevel, gray scale, palette, or true color images either from the Clipboard or a file. Specifically, it will read the following file formats:
TIFF (uncompressed bilevel, RLE or Group 3 compressed bilevel, uncompressed gray scale, uncompressed palette, uncompressed true color)
PCX (bilevel, gray scale, palette)
BMP

The best method for using Xoom Photo images with CorelDRAW! is to save them in the appropriate format, then use the CorelDRAW! Import command.

From CorelDRAW! to Xoom Photo:

Images clipped from CorelDRAW! are not in a format accessible to Xoom Photo.

Xoom Photo will read files that have been exported from CorelDRAW! in TIFF, PCX, or BMP format.

WORKING WITH OTHER APPLICATIONS

Microsoft Word for Windows

From Xoom Photo to Word:

Word will read bilevel or gray scale images either from the Clipboard or a file. Specifically, it will read the following file formats:
TIFF (uncompressed bilevel, uncompressed gray scale)

When pasting from the Clipboard, bilevel images are the best to use.

When images are pasted from the Clipboard, they are saved as part of the DOC file.

When reading images from a file, you must use the Insert Picture command.

From Word to Xoom Photo:

To bring an image from Word into Xoom Photo, Cut the image when you have selected the entire frame.

WORKING WITH OTHER APPLICATIONS

PC Paintbrush for Windows

From Xoom Photo to PC Paintbrush:

PC Paintbrush will read bilevel images either from the Clipboard or a file. Specifically, it will read the following file formats:
PCX
BMP
MSP

From PC Paintbrush to Xoom Photo:

Xoom Photo will read files from the Clipboard or that have been saved in PC Paintbrush in TIFF, PCX, or BMP format.

TROUBLESHOOTING

My images on the screen do not look good.

I cant get Xoom Photo to read my image file.

My application cannot read the TIFF file output from Xoom Photo.

I keep getting "Out of Memory" error messages.

I can't paste an image I've cut from Xoom Photo.

I have a supported scanner, but can't select Scan from the File Menu.

I seem to run out of memory during printing.

TROUBLESHOOTING

My images on the screen do not look good.

If you are using a standard EGA or VGA board with only 16 available colors, Xoom Photo does its best to display your image in 16 colors.

If you think you have a VGA that can handle more than 16 colors check using Windows Setup to make sure that you have a driver installed for Windows that takes full advantage of your board. These display device drivers usually come on separate disks from your Windows Software. Refer to the documentation included for your Display board.

TROUBLESHOOTING

I can't get Xoom Photo to read my image file.

Xoom Photo can only read files that are in the supported file formats. If you have a file in listed supported file format, but still cannot Open it, then the problem may lie in the format in which the file was written. (For example, the TIFF specification is very general, and Xoom Photo may not read an obscure variant of TIFF.) We recommend that you try using a different file format.

See also:

What Image File Formats Can I Use?

Working with Other File Formats

Saving an Image File in a Different Format

TROUBLESHOOTING

My application cannot read the TIFF file output from Xoom Photo.

Xoom Photo writes many variants of TIFF files, but not all applications can read all variants. If you saved the file as compressed, try saving it again without compression, then try to read it.

Your application may not be able to read the class of TIFF file. For example, it may not read true color or gray scale images. Use Xoom Photo to convert the file into a class your other application does read, then try again.

See also:

What Image File Formats Can I Use?

Working with Other File Formats

Compression: Overview and Commands

TROUBLESHOOTING

I keep getting "Out of Memory" error messages.

Images can use a great deal of memory. An 8 1/2" by 11" (full page) bilevel image at 200 DPI needs nearly .5 mb, a gray scale image of the same size needs 3.74 mb, and a color image needs nearly 12 mb.

Xoom Photo uses Windows to obtain memory it uses for images. If Windows does not have enough memory available, then the "Out of Memory" message will appear. If you have multiple applications open, you may wish to close down some to free some memory. If you are using a picture as wallpaper for your Windows background screen, you may wish to remove that.

If you are running on a 386 class machine, you can increase the size of your swap file. (Refer to your Windows documentation to learn how to increase the swap file size.)

TROUBLESHOOTING

I can't paste an image I've cut from Xoom Photo.

Check to see that the application into which you are pasting can handle the type of image you are trying to paste. Frequently, Windows applications can only Paste bilevel or gray scale bit maps. If this is the case, convert the image class into one that is supported by your application, then Cut and Paste, or use the Copy As command to convert and copy the image into the desired class.

TROUBLESHOOTING

I have a supported scanner, but can't select Scan from the File Menu.

You may not have installed the scanner driver for your scanner. See <u>Scanners</u> for instructions on how to add a scanner driver after the program has been installed.

TROUBLESHOOTING

I seem to run out of memory during printing.

If you have the print manager enabled, the application will first save the image to be printed to a file, then print it. If you are printing large posters, or have limited disk space, this may be a problem. Disable the print manager through the Printer setup option of the Windows control panel. A print command from Xoom Photo, or any application, will then send the print directly to the printer.

WORKING WITH OTHER FILE FORMATS

File formats are standardized methods of organizing images based on image class and compression type.

A summary of what file formats are supported by Xoom Photo, and how they are supported is as follows:

Format	Class	Compression	Read	Write
BMP (OS/2, Windows)	1-, 8- bit	None	Y	Y
		RLE	Y	Y
	24-bit	None	Y	Y
	4-bit	None	Y	N
		CMP	Y	N
CUT	8-bit	RLE	Y	Y
GIF	1-, 8- bit	LZW	Y	Y
	2-, 4- bit	LZW	Y	N
IMG	1-bit	RLE	Y	Y
MSP	1-bit	RLE	Y	Y
PCX	1-, 8-, 24- bit (includes VGA 256)	RLE	Y	Y
	4-bit	RLE	Y	N
TIFF	1-bit bilevel	None	Y	Y
		Fax Group 3	Y	Y
		Fax Group 4	Y	Y
	2-, 4-,6- bit	None	Y	N
		LZW	Y	N
		LZW (Horz. Dif)	Y	N
	8-bit palette, gray scale	None	Y	Y
		LZW	Y	Y
		LZW (Horz. Dif.)	Y	Y
	24-bit true color	None	Y	Y
		LZW	Y	Y
		LZW (Horz. Dif)	Y	Y
TGA	8-bit, palette	None	Y	Y
	16-, 32-bit true color	RLE	Y	N
	24-bit true color	RLE	Y	Y

See also:

What Image File Formats Can I Use?

Saving an Image File in a Different Format