Using InfoPrint Scan (Documentation from the Internet)

Contents

Hard Copy Scanning

Hard copy used to be the end of the print process. Make it the beginning with InfoPrint...

Highlights

- **Take advantage of the IBM InfoPrint Scan integrated solution, which combines hardware and software in a single system**

- **Dial hardware and software services with a single phone number**

- **Clean up and align scanned images for printing**

- **Zone pages automatically using the solution-integrated Xerox DocuImage 620S or Ricoh IS 420 (with IBM's exclusive image enhancement) scanner**

- **Save scanned files as PDF source for viewing, printing, and distribution on the Web**
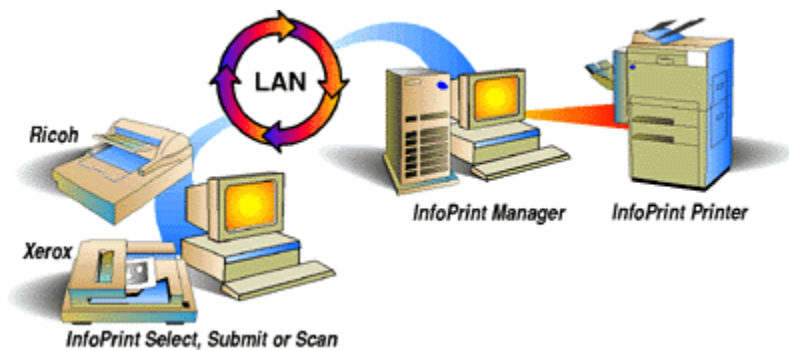
A local press republishes out-of-print books. With the Xerox DocuImage 620S, they can scan fragile originals--even large-format picture books. With **InfoPrint Scan** software, they erase the comments inked in the margin in 1923 and collate pages from two incomplete copies to recreate a perfect image of the first edition. Customers can link to sample chapters from their catalog on the Web.

Another print house has a basement full of records dating from the founding of the company through the year they switched to computers. The old ledgers and files take up needed space and are vulnerable to fire, dampness, crumbling paper, and misfiling. With **InfoPrint Scan**, they create electronic images of paper documents and adjust the images to improve legibility, then use InfoPrint Library to store their records in compact electronic format to be easily found and printed at need.

Every semester, a professor updates a customized course textbook. The reproduction center at the local university uses **InfoPrint Scan** to scan in new journal articles, assemble them with previously scanned articles, replace the course schedule, and print just enough copies for the

students.

Software Features

InfoPrint Scan
Scanning   • Scan and manage all pages as one document   • Preview the effect of your scanner settings before scanning   • Create and retrieve templates to reuse optimized scanner settings   • Select standard or custom page sizes   • Maintain correct page order when scanning duplex documents on a simplex scanner   • Zone pages manually or automatically   **Note:** Automatic zoning for the Ricoh IS 420 is exclusive to IBM. Manual zoning is supported only by the Xerox DocuImage 620S.   • Insert, replace, or delete single or multiple pages   • Save scanned documents in PDF format for viewing, printing, or Web distribution   • Save single pages in any Windows graphics format
Document Viewing   • Maintain detail and gray levels when viewing high-resolution binary images on a lower-resolution display   • Zoom   • Pan   • Navigate by page: First, Last, Next, Previous, Go to Page   • Optionally view ruler and crosshairs for page alignment
Document Manipulation   Perform these functions on all pages, even pages, odd pages, a page range, or a list of pages: • Page Alignment - visually align front to back or successive pages   • Page Edit - erase image areas

- Page Copy - duplicate editing and alignment changes from one page to another

- Deskew - remove page skew introduced in scanning

- Despeckle - remove unwanted black specks from page

- AutoCrop - remove black or white borders caused by skew

- Register – Automatically position images at a fixed margin

- Rotate - change orientation of page in 90-degree increments

- Auto-Rotate - automatically turn all text images right side up

Printing

- Portrait or landscape orientation

- Layout options: multiple side-by-side copies, two successive pages side-by-side, or two side-by side pages ordered for a folded booklet

- Combine scanned documents with documents in other formats in a single job

- Job scheduling options (rip, rip-and-hold, hold, print)

- Job retention after printing

Hardware Features

Xerox DocuImage 620S Scanner	Ricoh IS 420 Scanner
Bilevel, 256 levels of gray scanning modes	Bilevel, 256 levels of gray scanning modes
Up to 400 dpi true sampling resolution or 600 dpi interpolated resolution	Up to 400 dpi true sampling resolution or 600 dpi interpolated resolution for documents up to 8.1 in. x 11.3 in. IBM's exclusive image enhancement extends 600 dpi interpolated resolution to documents up to 11 in. x 17 in.
Up to 20 pages per minute throughput at 600 dpi	Up to 19 pages per minute throughput at 400 dpi, letter size, portrait orientation
11.69 in. x 17 in. flatbed	11 in. x 17 in. flatbed
Minimum document size: 1 in. x 1 in.	Minimum document size: 1 in. x 1 in.
Automatic document feeder (duplex)	Automatic document feeder (simplex)
Control of highlights, midtones, shadows, sharpness, brightness, and contrast	Control of brightness and contrast
Mixed text and halftone original scanning using auto-segmentation	Image Processing Unit allows mixed text and halftone original scanning
Power level: 100-120 or 200-240 VAC (different models), 60/50 Hz	Power level: 100-120 or 220-240 VAC (autoswitch), 60/50 Hz
Operational life: 5,000,000 scans	Operational life: 5 years or 300,000 book scans or 1,000,000 ADF scanned sheets (A4 size)
Price: $16,995 + $150 monthly maintenance charge (as of May 1, 1998)	Price: $6,800 + $90 monthly maintenance charge (as of May 1, 1998)

Information about the Xerox DocuImage 620 S scanner and the Ricoh IS 420 scanner was taken from publicly available information sources as of 5/13/98.

Scalability

You can install InfoPrint Scan on a PC without a scanner attached to edit scanned images, while you dedicate the PC with a scanner to new input. Add more scanners to improve throughput or more PCs to improve editing productivity.

Prerequisites

Software Prerequisites
Windows® 95 or Windows NT operating system
Hardware Prerequisites
Advanced Function Presentation (AFP) printer

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Using InfoPrint Scan Options

The IBM InfoPrint Scan application provides a number of options that you can set for image enhancement and for scanning. There are no particular settings for these options that will guarantee the best quality output. You determine the settings you need for the best quality output on a job-by-job basis by estimating the quality of your input, and by how the output appears on observation. The information in this document will explain your options to help you determine what settings you should use. Information is provided in the following topics:

Enhancing Images

Enhance Images when Scanning a New Document

Enhance Images in a Peviously Scanned
Document

Enhancement Options and Settings

Selecting Enhancement Options

Using the Scanner Settings Option

Scanner Settings

Advanced Template Settings

Notes:

Detailed information about using additional functions of InfoPrint Scan can be found in the online help that is provided with the program.

For you to carry out these procedures, it is assumed that:

- You have general knowledge of computers.

- IBM InfoPrint Scan version 3.1 is installed and configured to communicate with the InfoPrint server.

- A scanner is attached to the workstation on which InfoPrint Scan is installed.

Enhancing Images

You can improve the appearance of a Scan document with Scan's image enhancement functions. You can specify the settings used to enhance images by any of the following methods:

- Open InfoPrint Scan and click **Options** in the menu bar and then select **Enhance Settings...** to go directly to the Enhance Settings dialog box and specify the settings that you want used for image enhancement. For more information, see Enhancement Options and Settings.

- You can specify the settings and have the Scan program enhance images immediately after the document is initially scanned. For details, see Enhance Images when Scanning a New Document.

- You can specify the settings and perform image enhancement functions on a document or specified pages of a document that has already been scanned. For details, see Enhance the Images in a Previously Scanned Document.

- You can specify the settings and have the Scan program enhance images when you scan to add or replace pages in, or to append pages to a scanned document.

# Enhance Images when Scanning a New Document

Note: If you have invoked InfoPrint Scan from within the InfoPrint Submit program, place your original hardcopy document in the scanner, skip steps 1 through 4, and continue with step 5. If you are using Scan as a stand-alone application, begin with step 1.

To scan and create a new document:

1. Open InfoPrint Scan and place your original hardcopy document in the scanner.
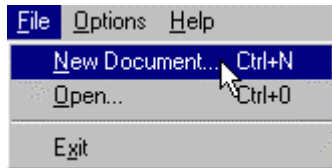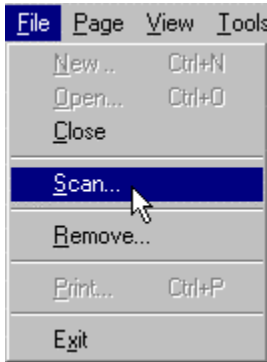

2. Click on **File** in the menu bar and then select **New Document...**.
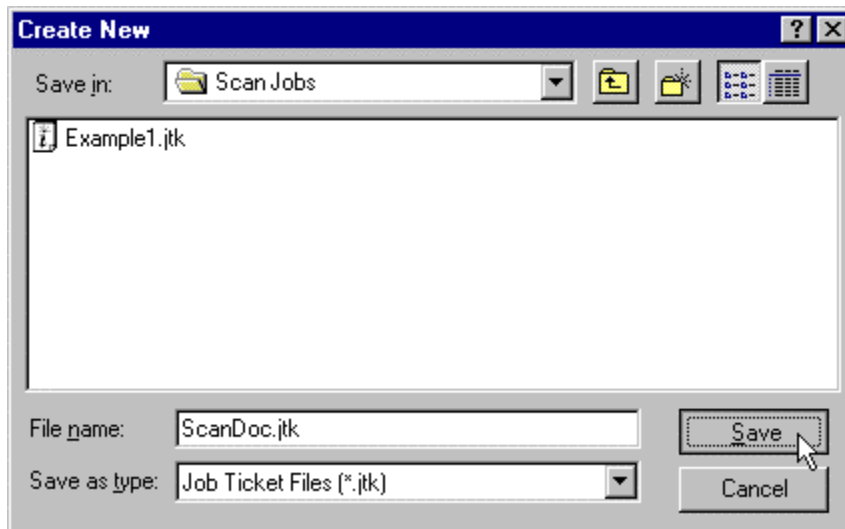

3. In the Create New dialog box:

   a. Select the directory into which you want to save the scanned document.
   b. Type a name for the Scan document in the *File name* field. This name will also be used for the name of the job ticket when you submit the document for printing.
   c. In the *Save as type* field, be sure **Job Ticket Files (*.jtk)** is selected.

4. Click on the **Save** button.

5. Click on **File** in the menu bar and then select **Scan...**.
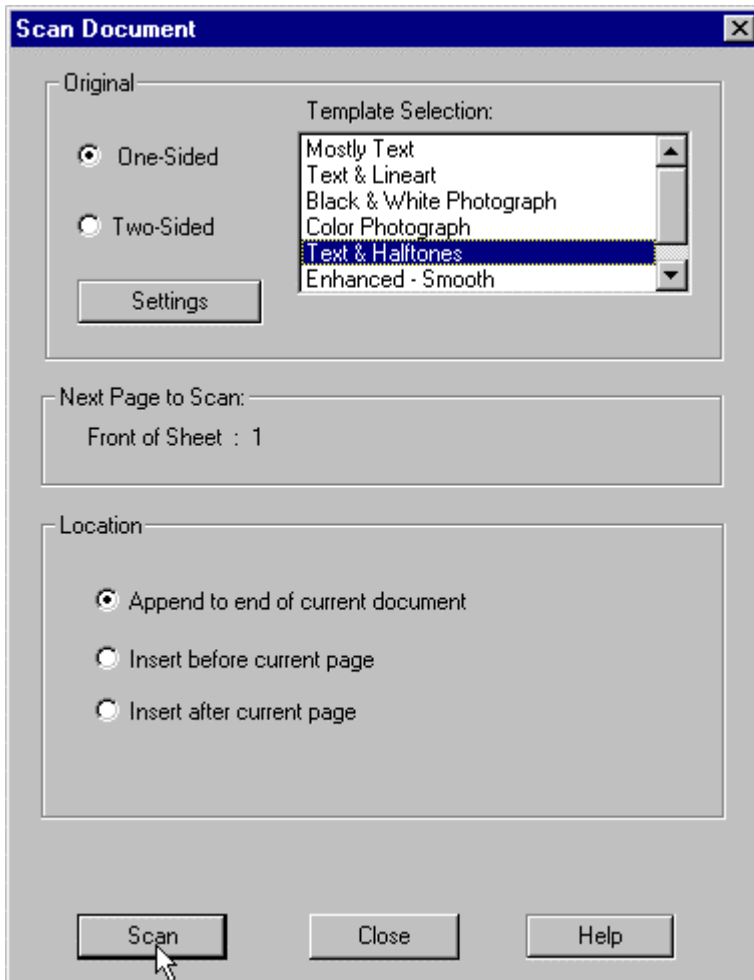
6. In the *Original* area of the Scan Document dialog box, select:

   One-sided if the original hardcopy document is printed on just the front side of the paper.

   Two-sided if the original hardcopy document is printed on both the front and back sides of the paper. See Tips for Scanning Two-Sided Orginals for additional information about scanning two-sided originals.

7. In the *Type Selection* list box, highlight the item that best describes the original hardcopy document.

8. Click on the **Settings** button to view or change the scanner settings. (See Setting Up the Scanner for additional information.)

9. Click on the **Scan** button.

   During the scanning process, the *Next Page to Scan* area will display the number and side of the sheet of paper that will be scanned next.
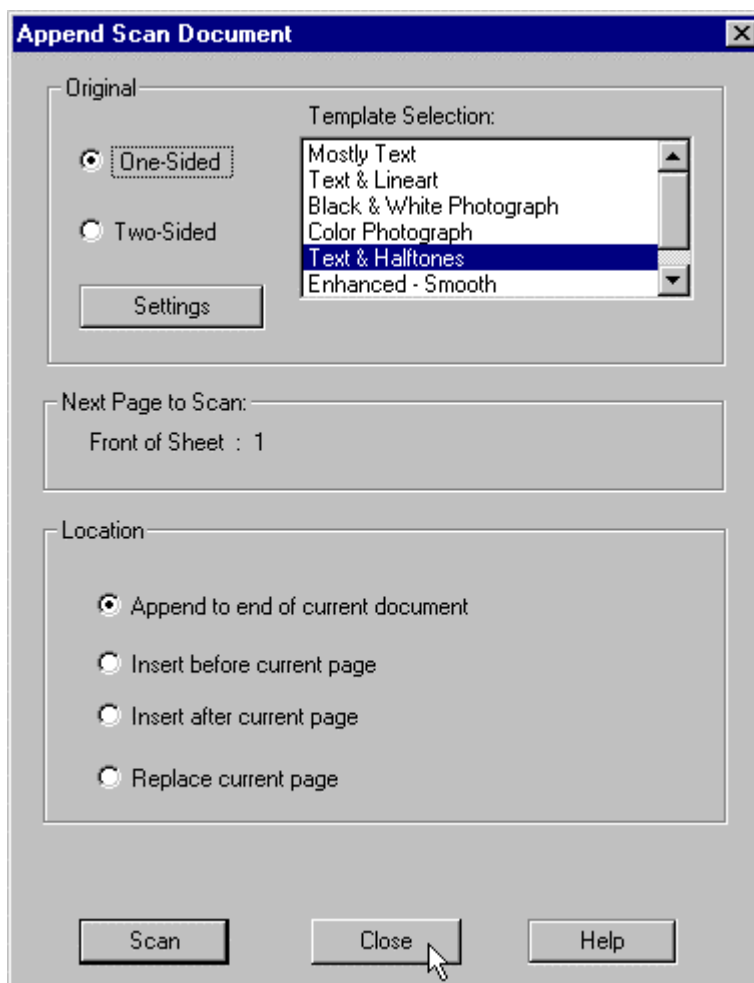
10. When scanning has completed, the Append Scan Document dialog box will open. If you want to scan more pages to add to specified locations in the new document, place your hardcopy originals on the scanner, and repeat these instructions, beginning with step 5.

11. Click on the **Close** button in the Append Scan Document dialog box to return to the new, open document.

12. If you will be enhancing the image on just one page, make that page current by using the options in the View menu.
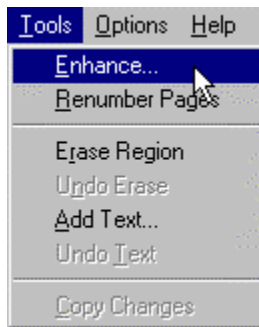
13. Click on **Tools** in the menu bar and then select **Enhance...**.
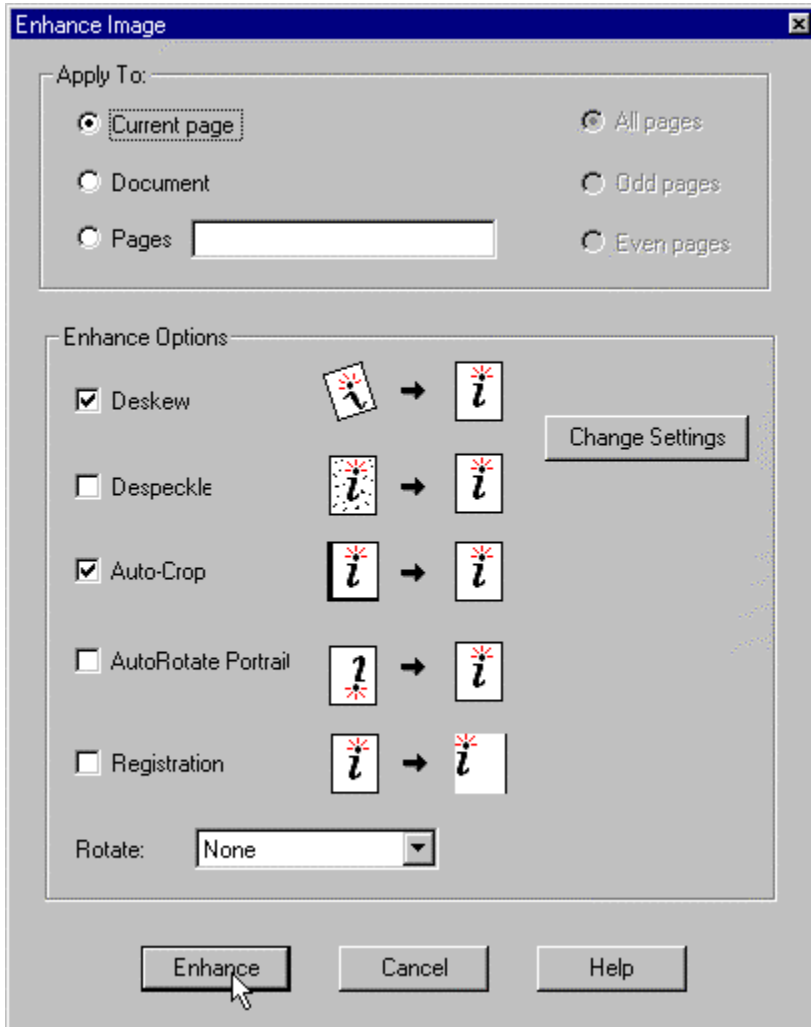
14. See Selecting Enhancement Options for information about the options in the Enhance Image dialog box.
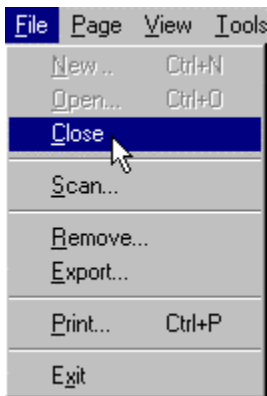
15. After the image enhancement has completed, click on **File** in the menu bar and then select **Close** to close and save the document, or **Exit** to close and save the document and exit the InfoPrint Scan application.

Tips for Scanning Two-Sided Orginals:

If you are using a *simplex* scanner, and you select **Two-sided** in the *Original* area, after the front side has completed scanning, you will be prompted to turn over the original hardcopy on the scanner so the back side can be scanned. When you are prompted:

    a. Click on the **OK** button in the prompt window.
    b. Turn over the original hardcopy in the scanner's document feeder.
   c. Click on the **Scan** button again to begin scanning the back side.

If you are using a *duplex* scanner, and you select **Two-sided** in the *Original* area:

- If your original hardcopy has a standard, predefined paper size (such as, Letter), the pages will be turned as they are scanned.

- If you define a custom paper size, after the front side has completed scanning, you will be prompted to turn over the original hardcopy on the scanner so the back side can be scanned. When you are prompted:

  1. Click on the **OK** button in the prompt window.
  2. Turn over the original hardcopy in the scanner's document feeder.
 3. Click on the **Scan** button again to begin scanning the back side.

Enhance Images in a Previously Scanned Document

Note: Image enhancement permanently changes the image. After enhancing, you cannot return the document to its original scanned image.
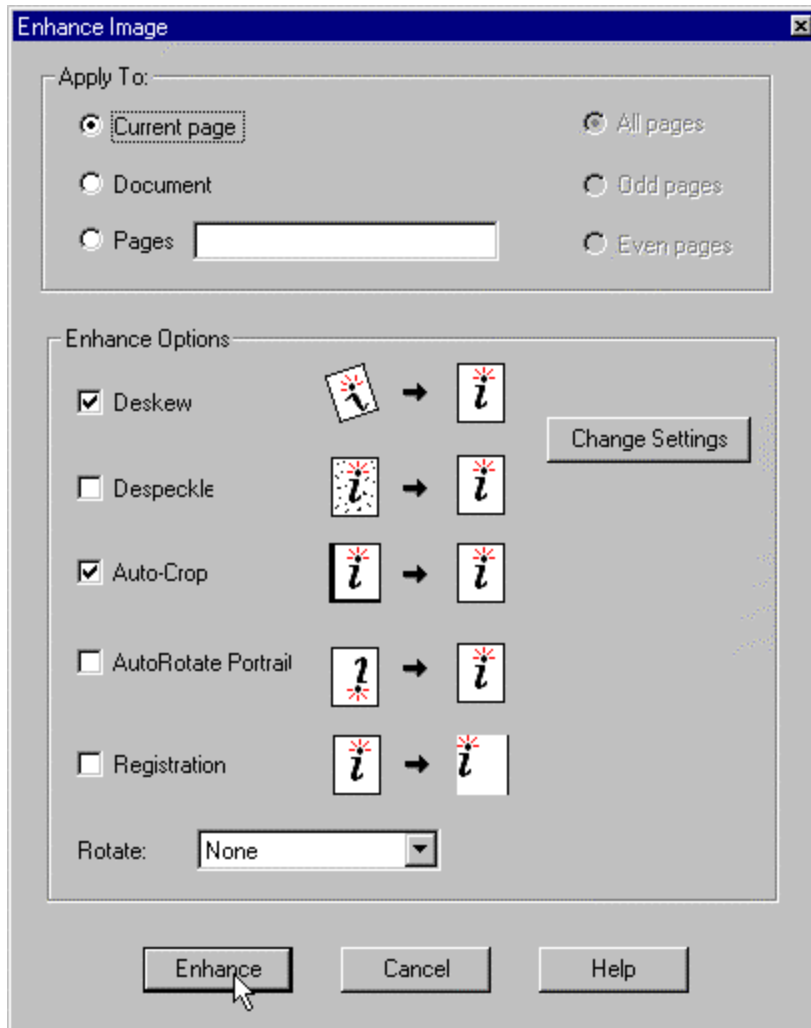
To enhance the images in a document that has been previously scanned:
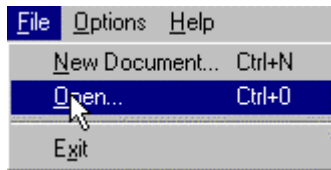
1. Invoke InfoPrint Scan and click on **File** in the menu bar and then select **Open...** to open the Scan document that you want to enhance.

2. If you will be enhancing the image on just one page, make that page current by using the options in the View menu.
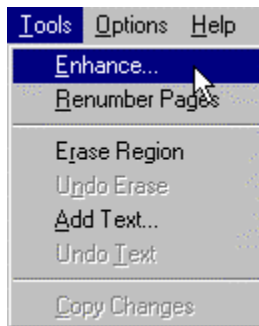
3. Click on **Tools** in the menu bar and then select **Enhance...**.

4. See Selecting Enhancement Options for information about the options in the Enhance Image dialog box.
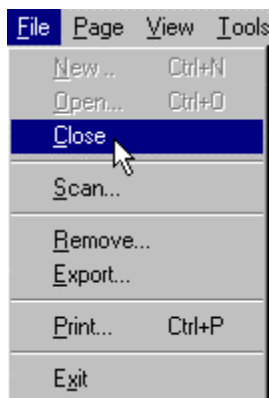
5. After the image enhancement has completed, click on **File** in the menu bar and then select **Close** to close and save the document, or **Exit** to close and save the document and exit the InfoPrint Scan application.

Enhancment Options and Settings

The following information is provided to describe the image enhancement options and to help you determine what values to set for these options.

FYI: In case you're not familiar with the term, a **pixel** is another word for pel, or picture element. This is defined as the smallest scanable, printable, or displayable unit on a physical medium or display surface. The pixel, or pels per inch (ppi), is often used as a measurement of presentation granularity.

Deskew

Deskew adjusts and corrects the angle at which a document is skewed, so the page and lines will be aligned properly. Skew is the position of paper going through the scanner's paper path at a slight angle, causing the scanned lines to not be aligned properly.

Deskew settings

In the Enhance Settings dialog box, move the slide bars in the *Deskew Sensitivity* area left to increase the values or right to decrease the values.
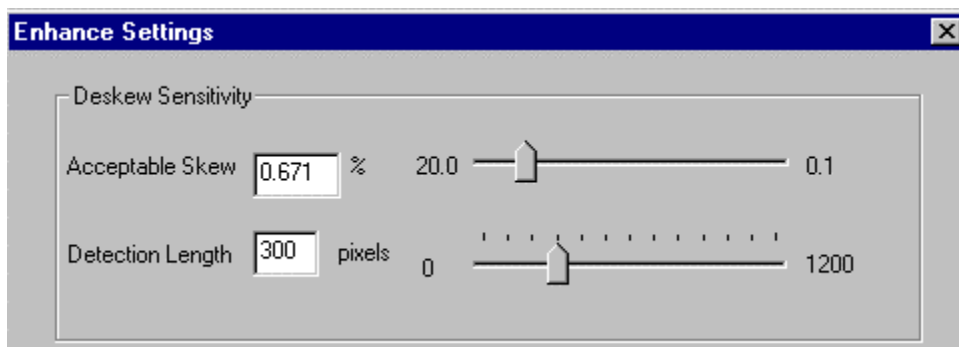
- **Acceptable Skew** - sets the maximum amount of skew that is accepted. Any image with less skew than the set value will not be corrected. Lowering the value will cause more images to be corrected, and raising the value will cause fewer images to be corrected. Setting to a lower value will result in higher scanning speed, since more images are left as is. For example, the original default setting is **0.671%**. This results in an image with no more than 150 horizontal pixels for each vertical pixel of skew. A lower setting of 0.5% results in an image with no more than 200 horizontal pixels for each vertical pixel of skew, and a higher setting of 1% results in an image with no more than 100 horizontal pixels for each vertical pixel of skew.

- **Detection length** - indicates the shortest line, in pixels, to be used to detect skew. This value should be at least 25% larger than Acceptable Skew. The original default is **300** (1 inch at 300 dpi).
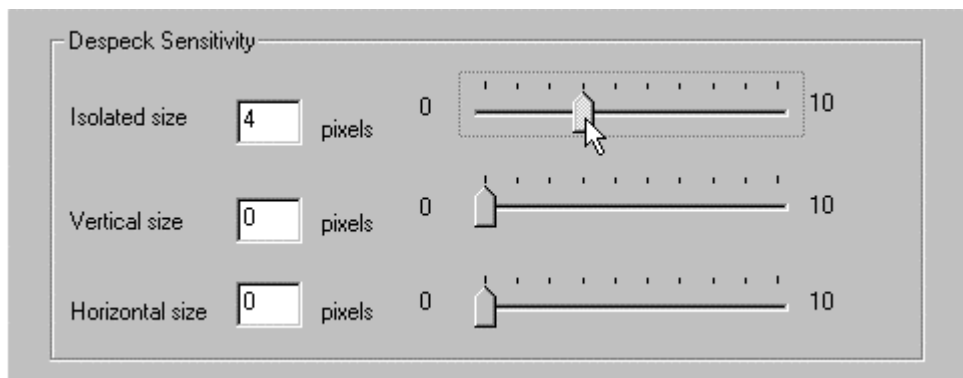
**Note:** See Fixed Image Size for important information related to using **Deskew**.

Despeckle

Despeckle removes isolated, unwanted specks that may occur during scanning.

Despeckle settings

In the Enhance Settings dialog box, move the slide bars in the *Despeck Sensitivity* area left to increase the values or right to decrease the values.

- **Isolated size** - determines the size of isolated specks that are removed. Larger values can cause periods and the dots on letters such as j to be removed. The original default is **4**.

- **Vertical size** - examines each vertical line 1 pixel wide and deletes all groups of pixels with a length less than the value specified. Larger values will remove larger specks. If the value is too high small segments of characters will be removed. The original default is **0**.

- **Horizontal size** - examines each horizontal line 1 pixel wide and deletes all pixels with a length less than the value specified. Larger values will remove larger specks. If the value is too high small segments of characters will be removed. The original default is **0**.
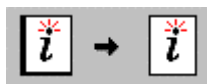
Cropping

Cropping eliminates an edge or border around a page that does not match the rest of the page. For example, if you have specified that your Scan document should print on an 8.5 inch x 11 inch page, but the original hardcopy document is smaller than 8.5 x 11 inches, without cropping, you would get black borders on the scanned pages, the width of the difference in size between the original pages and the scanned pages. With **Auto-Crop** turned on (selected) Scan will automatically eliminate the unwanted borders.

Auto-Crop settings

In the Enhance Settings dialog box, click the arrow in the *Cropping* area and highlight an Auto-Crop option.

- **Auto-Crop** - specifies the color of unwanted borders or edges that should be eliminated from pages. Choices are:

- **Crop Black** - Scan will eliminate black borders or edges from around pages. This is the original default.

- **Crop White** - Scan will eliminate white borders or edges from around pages.

Registration

Registration is used for page alignment. With this tool, you can position text horizontally and vertically on the page to provide consistent side and top margins.

Registration settings

In the Enhance Settings dialog box, in the *Registration* area, type the values you want for the left and top margins, and select or deselect the **Central Focus** and **Add Only** check boxes.

- **Resultant Bind Margin** - determines how many pixels will remain as the bind margin (for a two-page spread - or facing pages - the left margin on an odd-numbered page, or the right margin on an even-numbered page) after processing. Scan locates the bind edge of the text or data and positions the bind edge of the image the specified number of pixels from the bind edge of the text or data. Setting this value to 0 places the text or data flush with the bind edge of the image. A negative value crops the specified number of pixels from the bind edge of the text or data.

- **Resultant Outer Margin** - determines how many pixels will remain as the outer margin (for a two-page spread - or facing pages - the right margin on an odd-numbered page, or the left margin on an even-numbered page) after processing. Scan locates the outer edge of the text or data and positions the outer edge of the image the specified number of pixels from the outer edge of the text or data. Setting this value to 0 places the text or data flush with the outer edge of the image. A negative value crops the specified number of pixels from the outer edge of the text or data.

- **Resultant Top Margin** - determines how many pixels will remain as a top margin after processing. Scan locates the topmost edge of the text or data and positions it a fixed distance from the top edge of the image. Setting this value to 0 places the text or data flush with the top edge of the image. A negative value crops the specified number of pixels from the top edge of the text or data.

- **Central Focus** - causes Scan to register using only the middle portion of the image border. This is useful for ignoring edge noise, letterheads, and logos. You can activate this for the resultant bind margin, the resultant outer margin, the resultant top margin, any or all of these margins at one time, or none of the margins.

- **Add Only** - causes Scan to expand the current margin (if it is smaller than the specified value) to the size specified for the Resultant Bind, Outer, or Top Margin. You can activate this for the resultant bind margin, the resultant outer margin, the resultant top margin, any or all of these margins at one time, or none of the margins.

Note: To determine the value in pixels to enter for the resultant bind, outer, and top margins, multiply the dimension you want for the margin by the scanned resolution of the image.

Example:

As an example, let's say you want to center the body of text on a 6-inch wide x 9-inch long page, so that both the bind and the outer margins are the same. Assume that you have scanned the image at 600 dpi.

1. Measure the line length of the text, using the longest line on the page. For this example, assume that the line length is **4.5 inches**.

2. Subtract the line length from the width of the page.

   6.0 inches – 4.5 inches = 1.5 inches

   This leaves a total of **1.5 inches** for the margins.

3. Since there are two margins, divide the remainder by **2**.

   1.5 inches ÷ 2 = .75 inch

   For this example, the resultant margins are each **.75 inch**.

4. To convert this to pixels, multiply the width of each margin by the scanned resolution (**600 dpi** for this example).

   .75 inch x 600 dpi = 450 pixels

5. For this example, you would enter **450** for the value in both the *Resultant Bind Margin* and *Resultant Outer Margin* fields.

Note: Remember to adjust the values if you want a wider bind margin than outer margin, to allow additional room for 3-hole punching, saddle stitching, or other types of binding. For example, if you want the bind margin to be **1 inch**, and the outer margin to be **.5 inch**, for an image scanned at 600 dpi the resultant bind margin will be **600 pixels** (**1 inch x 600 dpi**), and the resultant outer margin will be **300 pixels** (**.5 inch x 600 dpi**).

Fixed Image Size

If the *Do not allow Enhance to modify image size* check box is **not** selected, Enhance will proportionally resize the image, when necessary, to fit on the page. When the box **is** selected (checked), Enhance **will not** resize the image.
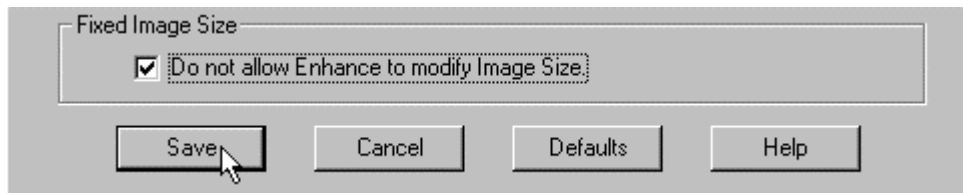
- Be sure to **check** this box when **Deskew** is selected.

- Be sure that this box is *not* checked when you have selected to **Rotate** the image and want the entire image to fit on the rotated page (such as when an image with a portrait, or vertical orientation is rotated 90 or 270 degrees to a landscape, or horizontal orientation).

Notes:

- When you use **Registration**, you should also activate **Deskew** unless you know that the original is perfectly straight.

- You can activate and set the parameters for horizontal (bind and outer edges of an image) and vertical (top edge) registration separately.

- For most operations where you require consistent bind and outer margins, you should activate horizontal registration. In many cases, you can leave vertical registration deactivated. For applications where precise text location is important, you should activate both horizontal and vertical registration.

- When you have finished specifying all of the settings, click on the **Save** button in the Enhance Settings dialog box.

- To return all of the settings to their original defaults, click on the **Default** button in the Enhance Settings dialog box.

Selecting Enhancement Options

You can select the enhancement options that you want Scan to perform when a new or previously created Scan document is open, as described in Enhance Images when Scanning a New Document, or Enhance Images in a Previously Scanned Document. With a Scan document open, do the following:
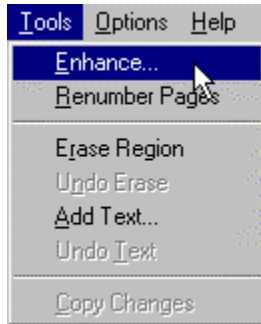
1. Click on **Tools** in the menu bar and then select **Enhance...**.
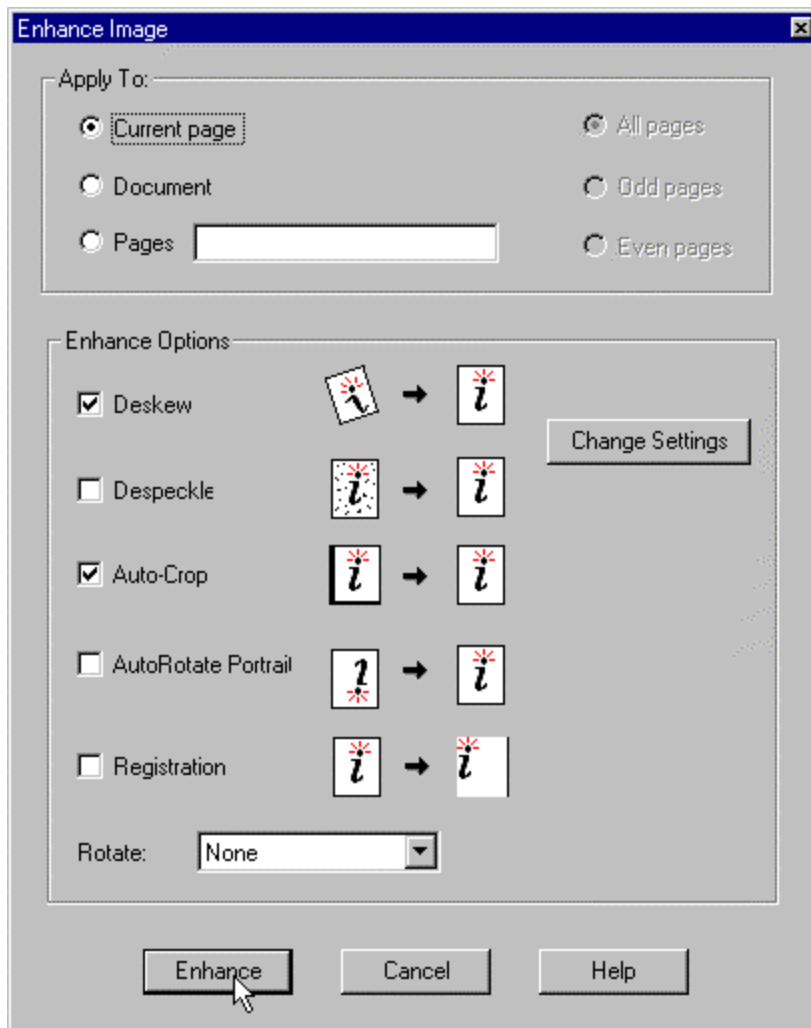
2. Select from of the following in the *Apply to* area of the Enhance Image dialog box:

- **Current page** - to apply the enhancements only to the page that is currently displayed.

- **Document** - to apply the enhancements to the document as specified with:

    - **All Pages** - to apply the enhancements to all pages in the document.

    - **Even Pages** - to apply the enhancements to all even-numbered pages.

    - **Odd Pages** - to apply the enhancements to all odd-numbered pages.

- **Pages _____** - to apply the enhancements to a specific page or pages, or to a range of pages.

    - For an individual page, type the page number of the page you want to print in the field provided.

    - For specific pages, type the numbers of all of the pages you want to print, each separated by a comma and a space (such as, **3, 9, 11, 24**).

    - For a range of pages, type the number of the first and last pages you want included, separated by a dash (such as, **15-20**).

    - You can also specify individual pages along with a range of pages (such as, **3, 9, 11, 24, 15-20**).

3. In the *Enhance Options* area, you can select the following options (see Enhancement Options for additional information):

- **Deskew** - adjusts and corrects the angle at which a document is skewed, so the page and lines are aligned properly.

- **Despeckle** - removes isolated, unwanted specks that may occur during scanning.

- **Auto-Crop** - eliminates an edge or border around a page that does not match the rest of the page

- **AutoRotate Portrait** - when this is selected, if Scan finds a page of text that is upside down, it will automatically rotate the page, so that the text is right side up.

- **Registration** - positions text horizontally and/or vertically on the page to provide consistent side and top margins.

- **Rotate** - rotates pages by a specified number of degrees from their current orientation. Options include:
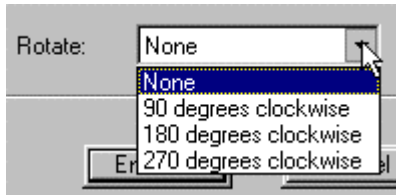
- **None** - do not rotate the page

- **90 Degrees Clockwise** -rotate the page 90 degrees clockwise (1/4 turn) from the current orientation. For example, this would cause a portrait (vertical) page to display or print in a landscape (horizontal) format.

- **180 Degrees Clockwise** - rotate the page 180 degrees clockwise (1/2 turn) from the current orientation. For example, a portrait (vertical) page would display or print with the head and foot areas of the page in reversed positions.

- **270 Degrees Clockwise** - rotate the page 270 degrees clockwise (3/4 turn) from the current orientation. For example, a landscape (horizontal) page would display or print with the head and foot areas of the page in reversed positions.

Notes:

- Any or all of the enhancement options can be selected at one time.

- See Fixed Image Size for important information related to using **Deskew** and **Rotate**.

1. Click on the **Change Settings** button to modify the enhancement settings. See Enhancement options and settings" on pagefor information.

2. Click on the **Enhance** button to enhance the image(s) based on the default or your modified settings
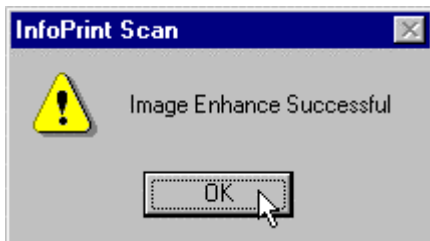

3. Click on the **OK** button in the message window when the image enhancement is completed.
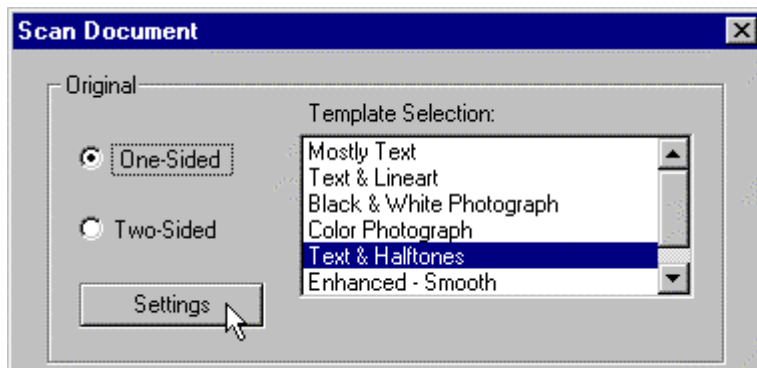
Using the Scanner Settings Option

InfoPrint Scan uses templates to tell the scanner how a page should be scanned. Several templates are provided with the program. These templates contain default scanner settings based on standard types of hardcopy originals. You can use these templates as provided, modify the templates, or define new templates.

To view, modify, or create a template, invoke InfoPrint Scan and open the Scanner Settings dialog box by one of the following methods:
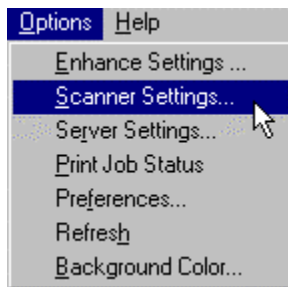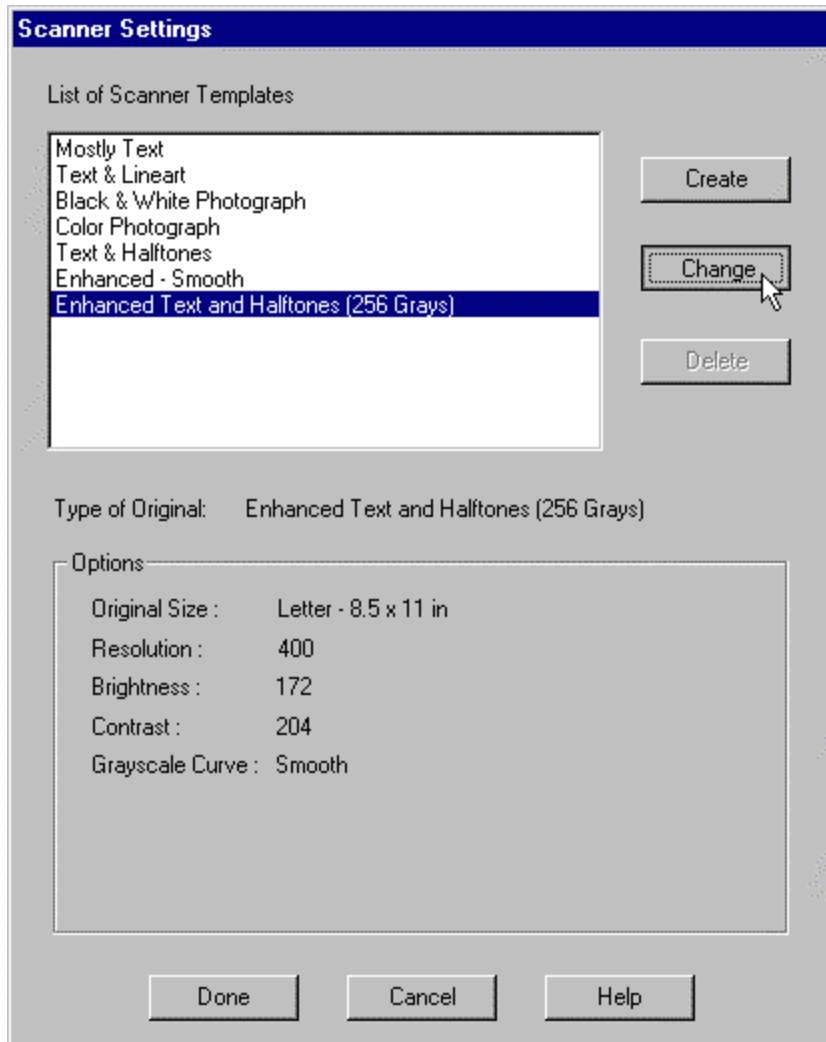

- After you have opened a new or an existing document, click on **Options** in the menu bar and then select **Scanner Settings...**. (If a document is not open, the option will not be available.)

or

- Click on the **Settings** button when the Scan Document or the Append Scan Document dialog box is displayed to open the Scanner Settings dialog box.

In the Scanner Settings dialog box, you can create a new template or modify an existing template.

To create a new template:

- In the List of Scanner Templates, highlight a template on which to base the new template. The *Options* area shows the current settings in the highlighted template.

- Click on the **Create** button.

To modify an existing template:

- Highlight the template in the List of Scanner Templates. The *Options* area shows the current settings in the highlighted template.

- Click on the **Change** button.

These actions will display the Create Template or Change Template dialog box.

1. Type a Name for the template (for Change, the template name will already be displayed).

2. Select the *Type of Original* for which the template will be used.

3. In the *Options* area:

   a. Select the size of the original in the list in the *Original Size* drop box. (Select **Custom** in the Original Size list to define an original size that is not listed.)
   b. Select the *Resolution* at which to scan the hardcopy original from the list in the Resolution drop box.

4. Specify values for the scanner settings. The available options will change, depending on the scanner that is installed and what type of original you specify. Only the options that are associated with the scanner and specified type of original will be available for modification. All of the possible options are described in <u>Advanced Scanner Settings</u>.

5. If it is available for your scanner and the specified type of original, click on the **More** button to see additional, advanced scanner setting options.

   a. Specify values for the options available in the Advanced Template Settings dialog box. The possible options are described in <u>Advanced Template Settings.</u>
   b. Click on the **OK** button to save your settings and return to the Create or Change Template dialog box.

6. In the Create or Change Template dialog box, click on the **Preview** button to see the effect of your changed settings as you create or modify the template.

7. Click on the **Save** button in the Create or Change Template dialog box when you have finished modifying the settings.

8. Click on the **Done** button in the Scanner Settings dialog box.

Tips for Using the Preview Option:

- Preview will actually scan and display a page, so be sure to place a hardcopy original page on the scanner.

- When previewing, if the Scanner Settings dialog box is accessed from the Scan Document, or Append Scan Document dialog box, the options in the View menu will not be available, but you can use the **+** key and **-** key to zoom in and out on the previewed page. If the Scanner Settings dialog box is accessed from the Options menu, the View menu options will be available.

- If you have changed one of the supplied templates, you can return it to its original settings by clicking on the **Defaults** button in the Create or Change Template dialog box.

Scanner Settings

You can specify values for the following settings in a scanning template:

Original size

This is the paper size of the hardcopy original document, before scanning.

Resolution

This is the resolution, in dots per inch (dpi), at which you want to scan the hardcopy original document. The higher the scan resolution you set, the finer the detail, but be aware that a high resolution image requires more memory space and processing time than a low resolution image. You will generally get high quality results if the scanning resolution is set to the resolution of your output device (the print resolution of the InfoPrint 60 is 600 dpi). A lower resolution will result in lower quality, and a higher resolution is a waste of memory.

The *Original size* and *Resolution* options are always available. The following are all of the remaining scanner setting options that are provided with Scan. Only the options that are associated with the scanner that is installed, and with the type of original that is specified are displayed and available for modification at any given time.

Brightness

A high setting results in a lighter overall image, and a low setting results in a darker overall image. When you scan a dark image, the darker areas may appear as deep black, even though they contain gray shades. Increasing the setting will cause the shades of gray to appear. Conversely, if a light image appears too white, decrease the setting.

Threshold Types

The threshold values determine the degrees of darks and lights at which images are scanned. The following threshold types are available:

> **Manual** - you determine the threshold. For light images, set a higher threshold. For dark images, set a lower threshold.
> **Automatic** - the scanner's image processing unit determines the appropriate threshold.
> **Enhance Light** - makes light lines darker.
> **Remove Background** - removes a light, overall background shade or color.

Filter type

The following filter types are available:

> **None** - no filter is used.
> **Line Bolding** - adds pixels to thin lines and characters.
> **Edge Extract** - creates outlines of text and graphics, displaying only the edges.
> **Remove Pasteup Lines** - removes imperfections from areas in an image where manual pasting has occurred on the original and has left lines around the added image area.

Contrast

> Controls the difference between the light areas and the dark areas of an image. A high setting emphasizes black and white, leaving few middle gray shades; a low setting emphasizes the middle gray shades, at the expense of black and white.

Sharpness

The degree to which an image appears crisp or contains well-defined edges. A lower level of sharpness will soften or blur the lines of an image. A higher level of sharpness will clarify or increase the lines of an image.

Reduce Moiré

Lessens the appearance of moiré patterns. A moiré pattern is an undesirable screen pattern caused by incorrect screen angles of overprinting halftones.

Grayscale

    Normal - emphasizes contrast slightly to improve image.
    Sharp - emphasizes contrast to a greater degree to sharpen image.
    Linear - outputs image as it was scanned, with no adjustment for contrast.
    Smooth - weakens contrast to soften image.

Enhance type

Choose one of the following, based on the composition of your original hardcopy:

    Text and Halftone
    Pictures (photos)
    Color Halftones

Advanced Template Settings

If it is available for your scanner, and for the type of original you specified, you can click on the **More** button in either the Create Template or Change Template dialog box to see additional, advanced scanner setting options. Only the options that are associated with the scanner that is installed, and with the type of original that is specified are displayed and available for modification at any given time.
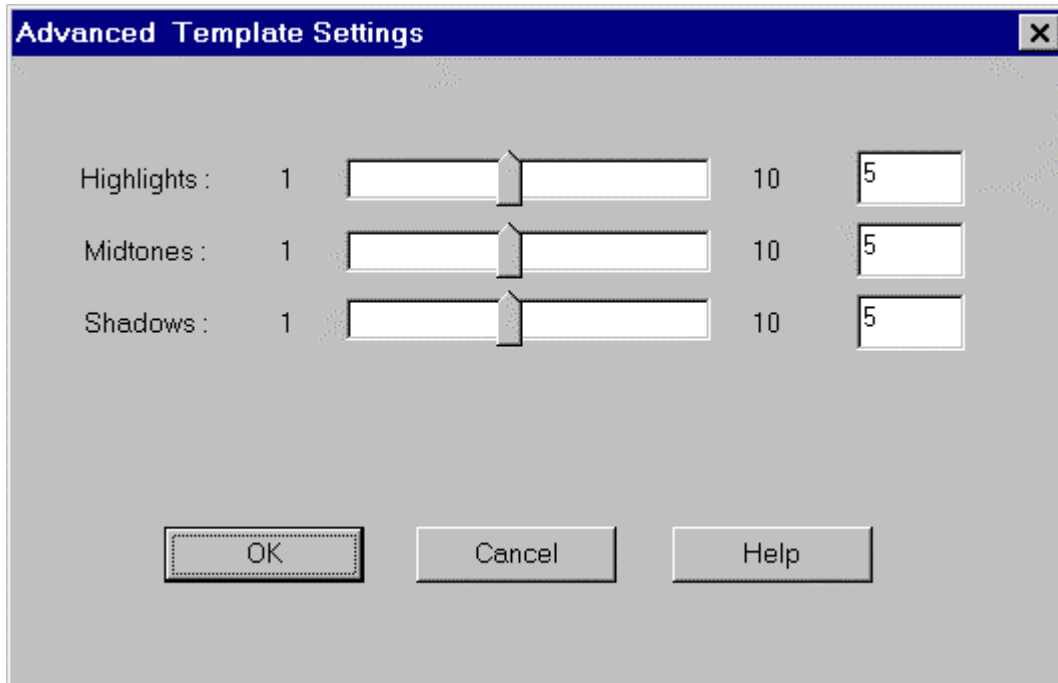
The following are all of the possible advanced template setting options that can be provided in the Advanced Template Settings dialog box.

Highlights Highlights are the white and very light gray areas in an image. Use the slide bar to increase or decrease the whitest or lightest areas of the image.

Midtones Midtones are the light and medium grays in an image. Use the slide bar to increase or decrease the appearance of the image midtones.

Shadows Shadows are the darkest or blackest areas of an image. Use the slide bar to increase or decrease the appearance of image shadows.

Screen Specify a halftone screen value, in units of lines per inch, to apply to images when scanning.

Descreen Specify the value of the halftone screen, in units of lines per inch, that you want to remove from an image when scanning.