# Kofax eFlow
## Scan User's Guide

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KOFAX

# Table of Contents

# Preface

The Scan station imports image files from external devices, creates eFlow collections, and loads them to the eFlow workflow. The Scan station is an eFlow entrance point and is never preceded by other stations in the workflow.

The Scan station is added to the eFlow workflow using the Design module. The eFlow installation includes sample eFlow applications with ready-made workflows that include the Scan station.

Scan imports images into eFlow as a sequence of three steps:

1. Input images from paper documents fed into scanning devices
2. Process the images to create collections
3. Send the collections on to the workflow

Scan provides a configuration window in which you can control various aspects of the station's operation, such as which file types are input, how collections and forms are separated, and how images are enhanced to improve recognition quality. See Configuration for more information.

## Product documentation

To access the full Kofax eFlow documentation set online, see the Kofax eFlow Product Documentation page. For a complete set of Kofax eFlow documents, refer to the Kofax eFlow Release Notes.

Chapter 1

# Scanner configuration

You must configure the eFlow Scan station to work with one of the scanner drivers installed on the computer that runs the station.

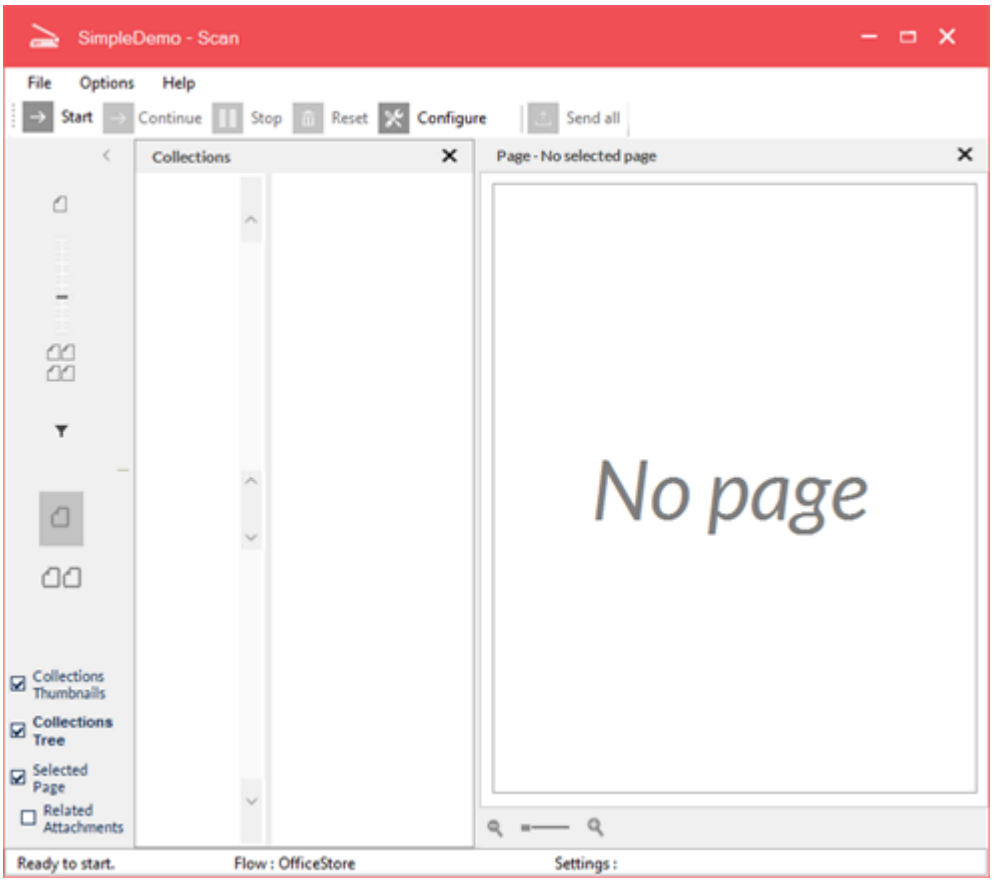
You can configure several scanner drivers and assign different scanners to different flows.

## Before you begin

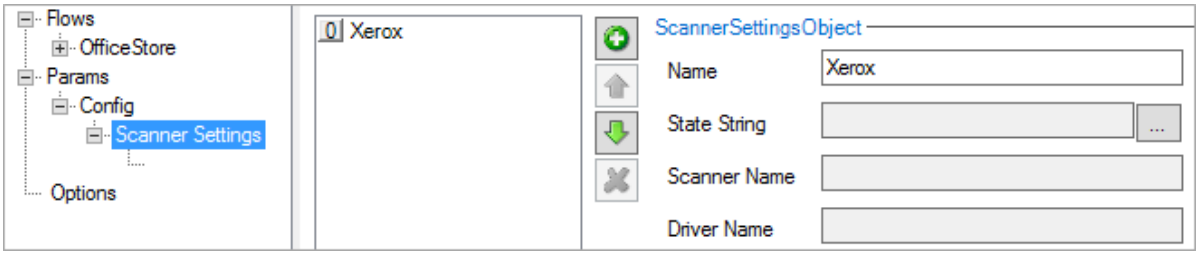
1. Install the scanner driver in accordance with the scanner's setup procedures.
2. Make sure that the scanner works correctly by testing it with an application that is not part of eFlow.
3. Ensure that the scanner is properly powered on and connected to the Scan station computer.

## Configure a scanner

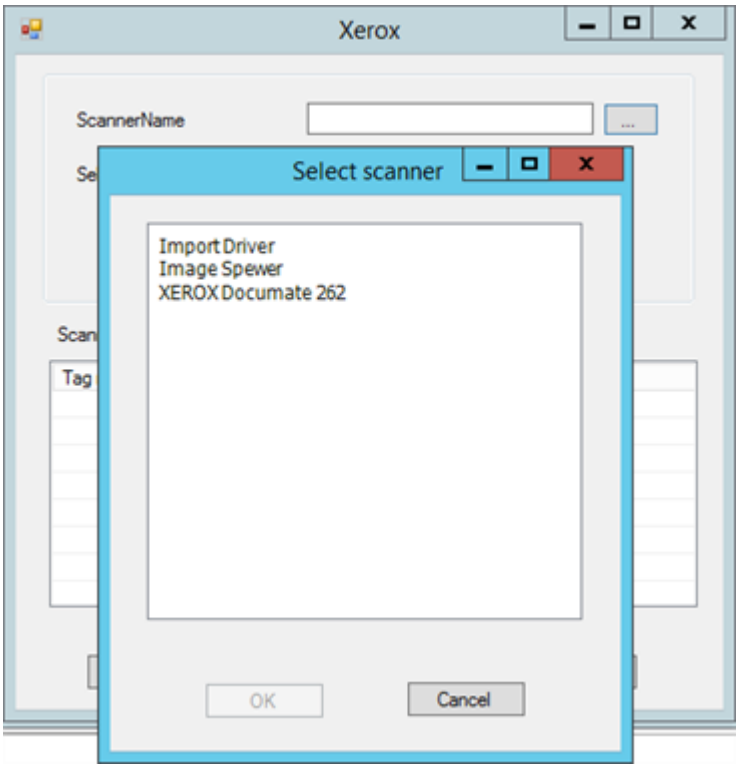
1. In eFlow Launch or LaunchPro, select the application you want to work with, then select the Scan station.
   The Scan main window opens.



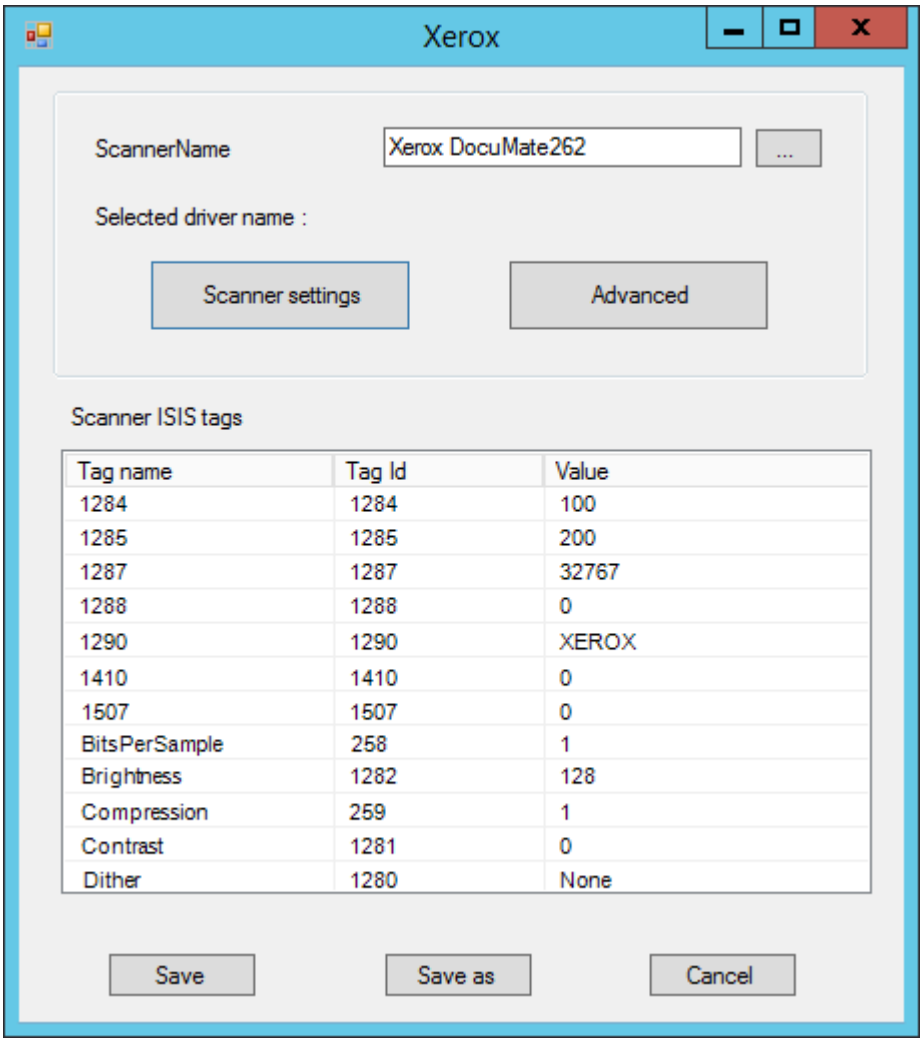

2. On the toolbar, click **Configure** , or select **File** > **Configure**.
3. In the **Configuration** window, under **Params** > **Config**, click **Scanner Settings**.
4. Click **Add** .
   A new entry appears in the scanners list.
5. In the **Name** field, type a name for the scanner configuration.




6. Click ellipsis next to the **State String**. The dialog box for the defined scanner configuration opens.
7. Click ellipsis next to the **Scanner Name**.
8. Select the scanner and click **OK**.




9. Click **Scanner settings** to modify the scanner settings.
   The **Scanner settings** window lists the values of the scanner appliance settings.

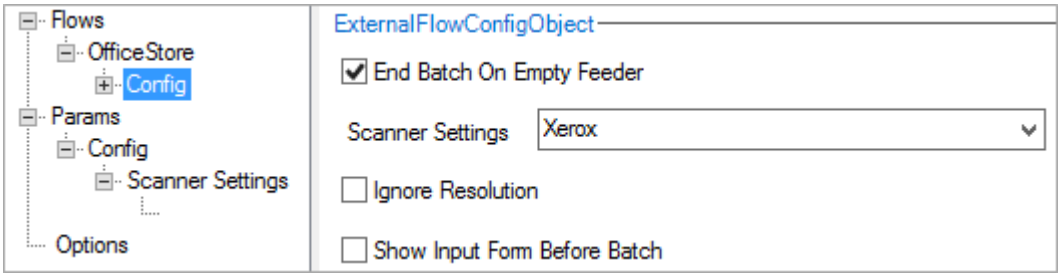



10. Click **Advanced** to modify the advanced settings.

    We recommend that you keep the **Scan ahead** option selected unless you are sure it must be cleared.
11. Click **Save** to complete the scanner configuration and return to the **Configuration** window.

## Assign a scanner to a flow

1. In the Configuration tree, under Flows, click **Config**.
2. In the **Scanner Settings** list, select the scanner.




For information on the other settings, see Flow configuration settings.

3. Click **OK** to save your changes.

## Remove a scanner

1. In the Configuration tree, under **Params** > **Config**, click **Scanner Settings**.
2. Select the scanner in the list and click **Delete** .

Chapter 2

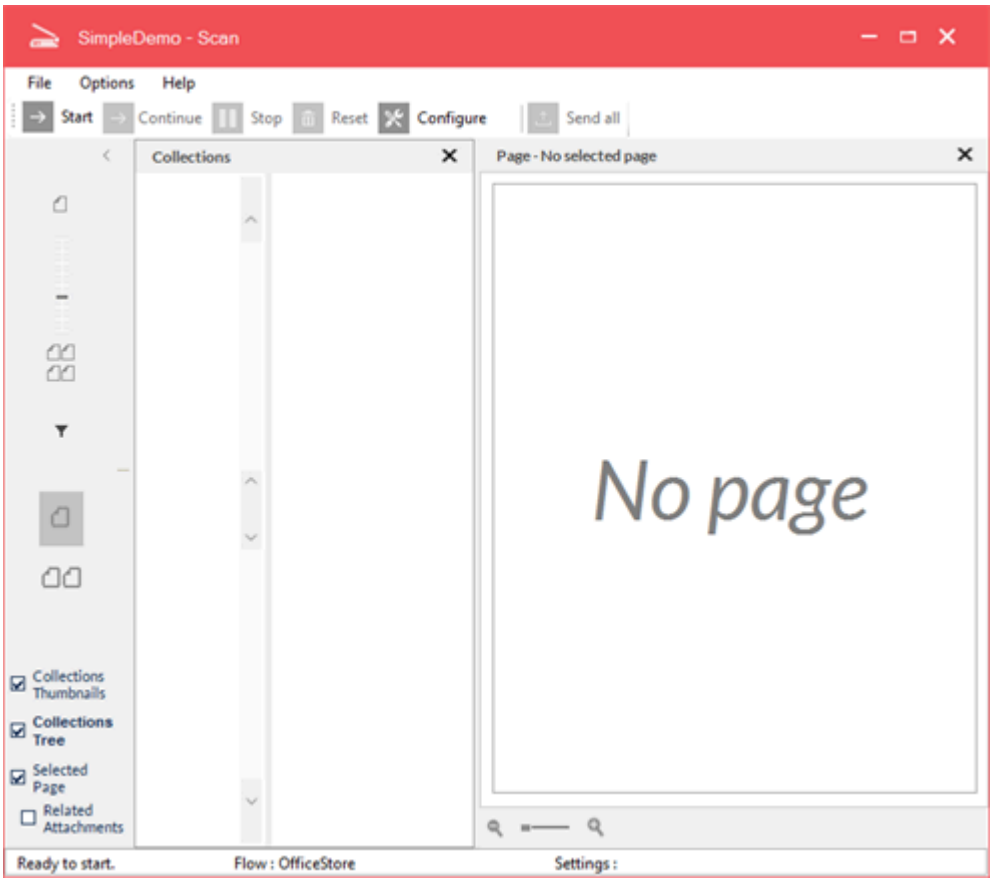
# Operation

This chapter explains how to operate the Scan station. Unlike the Collect station, which can run automatically, the Scan station is always operated manually.

1. Make sure that you have installed the scanner driver and configured the scanner. See Scanner configuration.

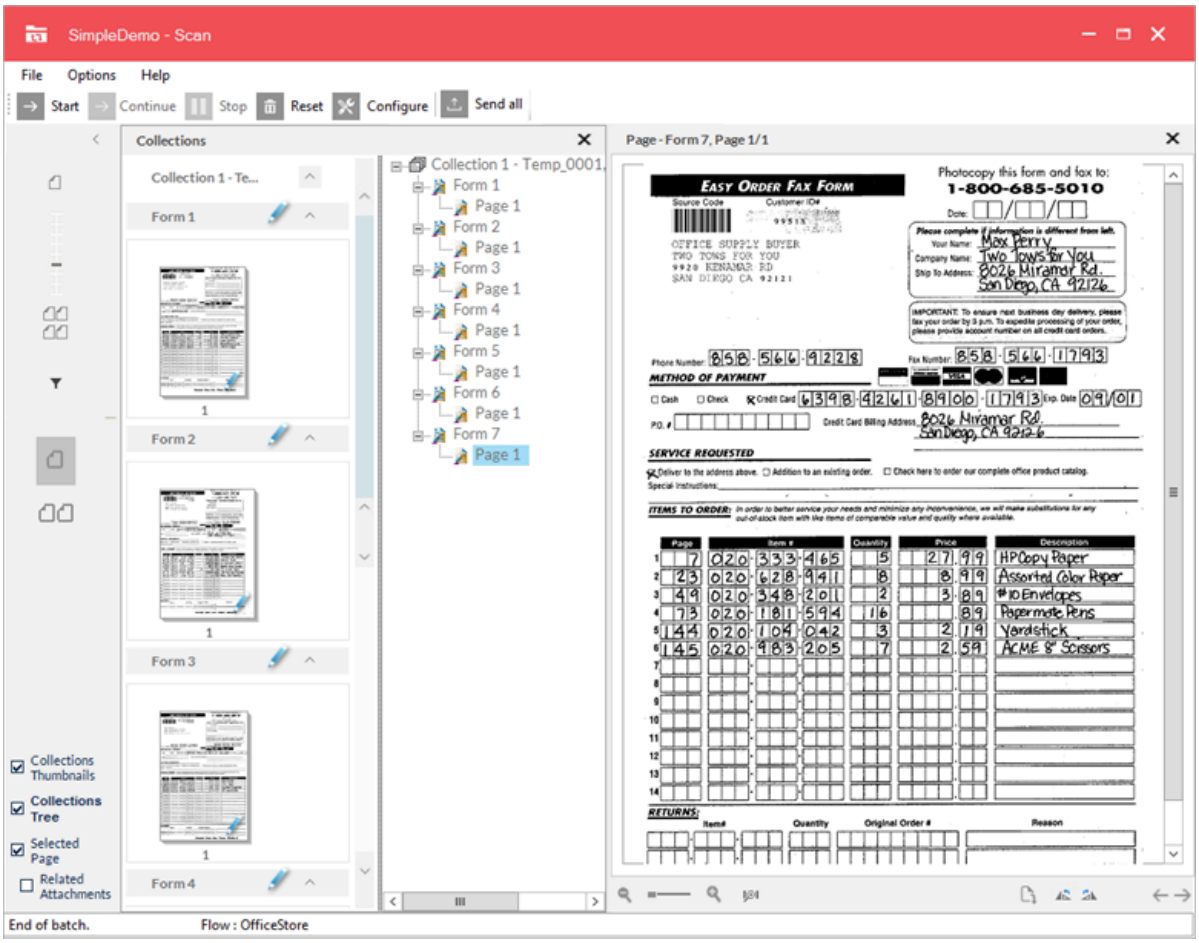
   When scanning in duplex mode, always set the **Fast scan mode** option to **False** to avoid "Out of memory" errors. See Parameters and options for more information.

2. Place the documents to be scanned in the scanner's input tray.
3. In **eFlow Launch** or **eFlow LaunchPro**, select the application you want to work with, then select the Scan station.
   The Scan main window opens.




4. Click **Start** to commence scanning.

   For each scanned document, Scan receives the incoming image file and adds it to the collections, which it then displays in the **Collections** view of the main window.
5. Optional. If the Organize module is integrated in your Scan station, you can rearrange collections, forms, and pages, or make modifications to forms and pages.




6. Click **Send all** to send the collections into the eFlow workflow.

> To have Scan send collections automatically as soon as they become available, select the **Send Batch Automatically** option in the parameters.

Chapter 3

# Configuration overview

This chapter provides an overview of the Collect station configuration.

## Server and client configuration

The station can be configured with a server configuration and an almost identical local configuration. The local configuration is saved on the client, the computer on which the station runs. Providing separate configurations for the server and clients enables you to provide each Collect station with a default configuration, and then make individual changes for each station, as required. The server is configured in the Workflow Designer in the eFlow Design module. The local configuration is done through the **Configuration** window of each station.

Most server settings can be overridden locally. Any server settings that are retained are displayed read-only in the client's **Configuration** window.

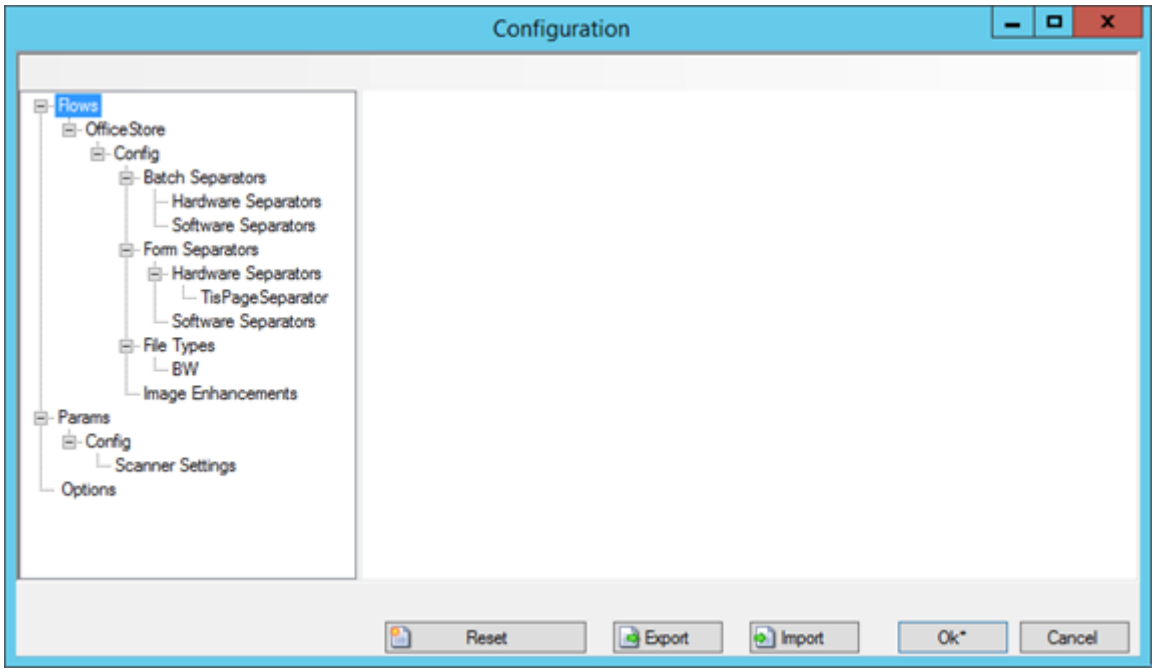
You can reset the client configuration to the defaults by clicking **Reset** in the client's **Configuration** window, or by deleting the XML configuration file for the eFlow application in the `AppData\Configuration` folder. For example:

```
C:\ProgramData\TIS\eFlow 6\AppData\Configuration\SimpleDemo.XML
```

For more information on the server configuration, refer to the *Kofax eFlow Design User Guide*.

## Configuration window

To open the **Configuration** window, in the Scan station, click **Configure**  , or select **File** > **Configure**.




The configuration settings are displayed in a tree, with the following main entries.

| Entry | Description |
|---|---|
| Flows | Lists all flows defined in the eFlow application. You can provide a separate configuration for each flow, by defining the following sub-entries:<br>• **Batch Separators**: Hardware and software separators to indicate at which page one collection ends and the next collection starts.<br>• **Form Separators**: Hardware and software separators to indicate at which page one form ends and the next form starts.<br>• See Separators for more information.<br>• **File Types**: The imported image types, and the output file types created from each input image type. See File types for more information.<br>• **Image Enhancements**: Enhancement filters to improve the quality of the input images. See Image Enhancements for more information. |
| Params | Global parameters relevant to all flows. See Parameters and options. Also allows you to configure scanners. |
| Options | Global options relevant to the user interface. See Parameters and options. |

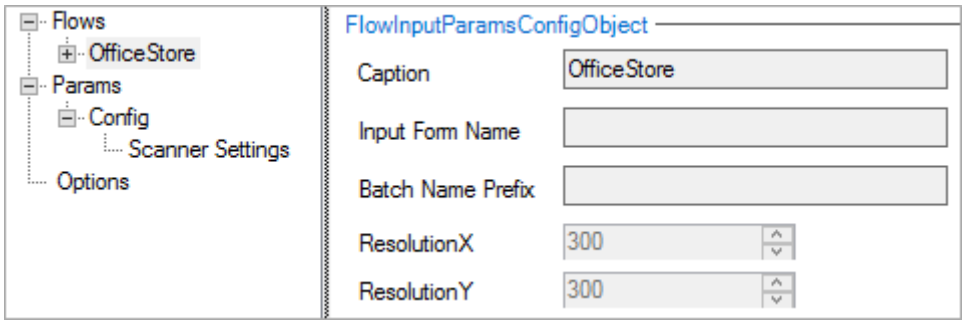
Use the buttons at the bottom of the **Configuration** window to save, import, export and reset the configuration.

| Button | Description |
|---|---|
| Reset | Resets all configuration values to the default values defined on the server. |
| Export | Exports the current configuration to an XML file. |
| Import | Imports a saved XML configuration file. |

| Button | Description |
|---|---|
| OK | Saves all changes and closes the Configuration window. |
| Cancel | Discards all changes and closes the Configuration window. |

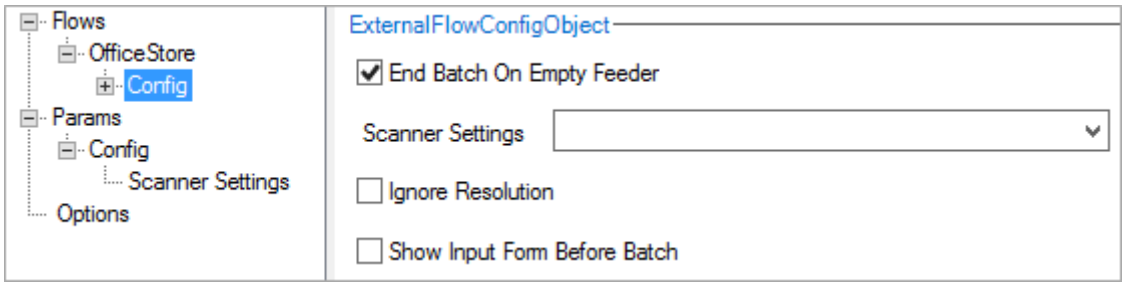
# Flow settings

The general settings for a flow are displayed when you click on the flow name in the configuration tree. These settings are defined on the server side, in the Design module, and cannot be changed in the client configuration. Refer to the *Kofax eFlow Design User Guide* for more information on these parameters.




# Flow configuration settings

To configure the scanner and other settings for a flow, in the configuration tree, click the **Config** entry below the flow name.




| Setting | Description |
|---|---|
| End Batch On Empty Feeder | Specifies whether Scan completes a collection when it detects that the scanner feeder has become empty.<br>If selected (default), a collection is completed when the scanner feeder has become empty.<br>If clear, a collection is not completed when the scanner feeder has become empty. All further images are added to the current collection. In this case, collections are separated only by separators or by the user clicking **Stop** and then **Send All**. |

| Setting | Description |
|---|---|
| Scanner Settings | Specifies the scanner driver configuration to use for scanning in from a connected scanner appliance. See Scanner configuration for information on adding scanner drivers.<br>This feature allows a different scanner to be used for each flow within an eFlow application.<br>There is no default setting; in a fresh eFlow installation, no scanner driver configuration is selected, even if scanners are already selected. |
| Ignore Resolution | Specifies whether Scan ignores the default **Image Resolution** setting in the Design module when inputting files. Refer to the *Kofax eFlow Design User Guide* for information on the Image Resolution setting.<br>If selected, Scan inputs and creates collections even from images whose resolutions are not the same as the **Image Resolution** setting.<br>If clear (default), Scan ignores all files whose resolutions are not the same as the **Image Resolution** setting. A warning message is written in the log. |
| Show Input Form Before Batch | You may want to associate information with batches that varies from batch to batch. This is accomplished with a form that contains the fields you need. In eFlow this form is called an input form. The form is defined in the Design module using the **Input Form** property. When you define a form as an input form, Scan assigns this form once for each batch.<br>This setting specifies where Scan inserts the input form.<br>If selected, inserts the form at the beginning of the batch.<br>If clear (default), inserts the form at the end of the batch. |

Chapter 4

# File types

You must define input file types to specify in which format Scan should scan in document pages. The input file type can be black and white (BW) or color.

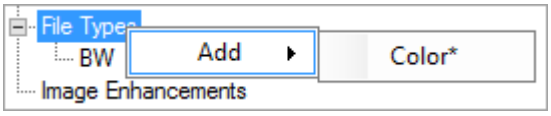
For each input file type, you must also define one or more output file types. Each input image is matched to an input file type and then mapped to one or more output file types, which are then used to build collections.

For example, you can configure Scan to output black and white images as TIF files, and color images as JPG files. You can output a single input file type to multiple output file types; Scan creates an output file for each output file type you define. The default input file type is BW, for which the default output file type is TIF.

You must define input and output file types for each eFlow application and flow.

## Add an input file type

1. In the **Configuration** window, right-click **File Types** and select **Add**.
2. Select the file type from the list.




3. Click **OK** to save your changes.

Adding both **BW** and **Color** file types creates both black and white and color images, but this is only applicable for dual stream scanners. If only color images are scanned, these will be binarized automatically applying the PixTools binarization algorithm.

## Remove an input file type

1. In the **Configuration** window, right-click **File Types** and select **Remove**.
2. Select the file type from the list.

The **Remove** button is not available if you have only defined one file type.

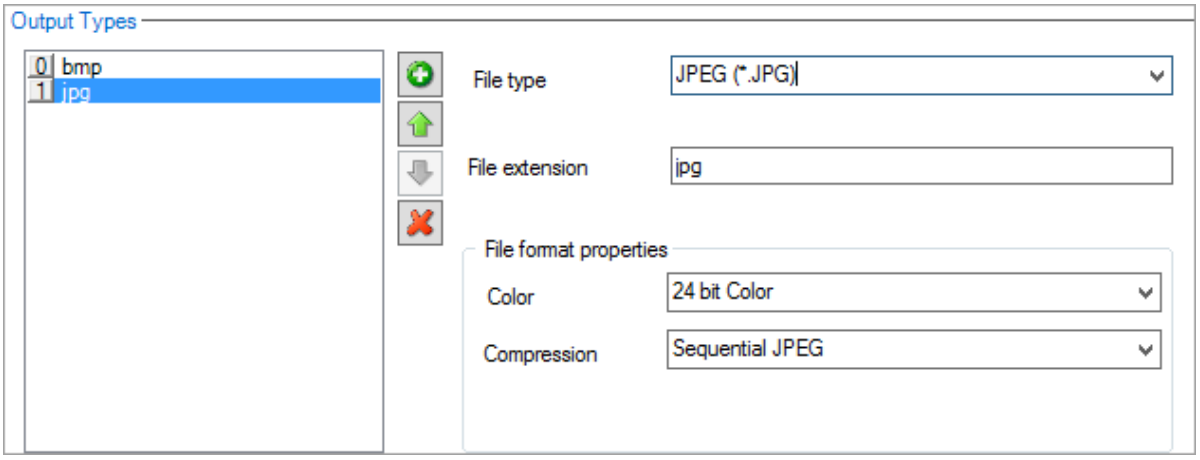
3. Click **OK** to save your changes.

## Add an output file type

1. In the **Configuration** window, under **File Types**, click the input file type for which you want to define the output file type.
2. Click .
   A new blank entry is added to the **Output Types** list.
3. Click on the new entry and in the **File type** list, select the output file type.
   The corresponding **File extension** is entered automatically.

   Do not define duplicate file type in Output Types.

4. Optional. Select values from the **Color** and **Compression** lists.




5. Optional. If you add several output file types, you can change the order of the files in the list by clicking and buttons.
6. Click **OK** to save your changes.

## Remove an output file type

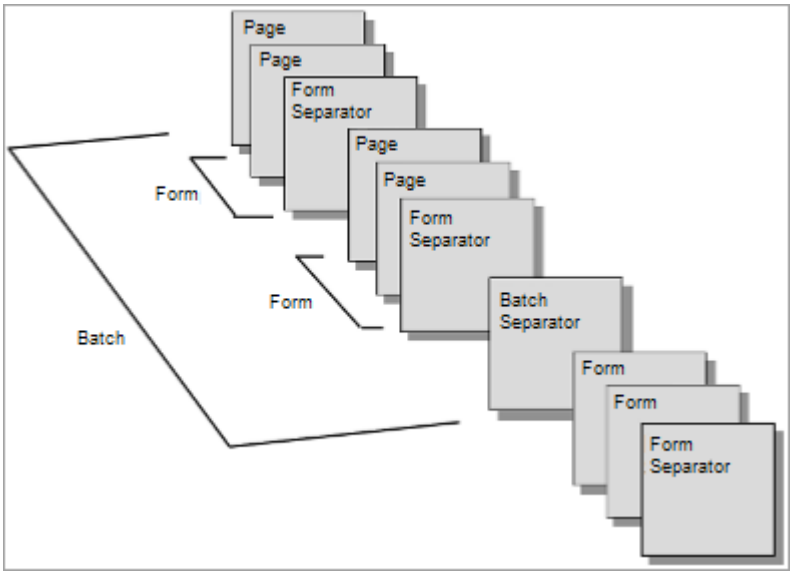
1. In the **Configuration** window, under **File Types**, click the input file type.
2. In the **Output Types** list, select the output type and click .
3. Click **OK** to save your changes.

Chapter 5

# Separators

A collection, or batch, is the logical work unit of eFlow, which is passed from one station to the next. However, the input stream of images into the Scan station is unstructured. This input stream is a sequence of scanned pages into Scan. Separators are used to indicate at which page one batch ends and the next batch starts.

Similarly, within a single batch, separators indicate at which page one form ends and the next form starts.




Separators can be implemented in any conceivable way of marking where a batch or form starts and ends. For example, a separator can be a specially designed page, a blank page, a specific barcode, or a specific number of forms or pages. For example, if you want to group sets of one hundred pages during input, then inserting a batch separator page after each set of one hundred pages will mark each set as a separate batch.

There are two general categories of separators: hardware separators and software separators.

The Batch Separators and Form Separators entries in the Configuration window enable you define hardware and software separators to separate batches and forms. The same types of separators are available for both batches and forms.

You must define any batch separators and form separators that you require for each separate eFlow application and for each separate flow. Separators you define for one flow are not applied to any other flows.

You can define up to four different types of hardware separators and three different types of software separators, of the same type, or of different types and in any combination. The station separates the batch or form as soon as the first separator is found; it does not check the rest of the separators and continues to the next page.

An integrated testing tool for is provided for software separators to help you verify that your separator definitions will correctly detect the separator pages.

# Separator types

The following types of separators are available.

## Hardware separators

| Separator | Description |
|---|---|
| TisPageSeparator | Defines the batch or form as a fixed number of pages. When the station has counted the specified number of pages, it concludes the batch or form. |
| TisHardwareJobSeparator | Defines job separators as separators for batches or forms. When the station finds a job separator, it concludes the batch or form.<br>A job separator is a specific feature defined by scanner hardware. |
| TisHardwareBarcodeJobSeparator | Defines a page with a barcode as a separator for batches or forms. When the station finds a page with a barcode, it concludes the batch or form. |
| TisHardwarePatchcodeJobSeparator | Defines a page with a Kodak patchcode as a separator for batches or forms. When the station finds a page with a Kodak patchcode, it concludes the batch or form. |

## Software separators

| Separator | Description |
|---|---|
| Barcode | Defines a page with a barcode as a separator for batches or forms. When the station finds a page with a barcode, it concludes the batch or form. |
| Blank page | Defines blank pages as separators. When the station encounters a blank page, it concludes the batch or form. |
| Patchcode | Defines a page with a Kodak patchcode as a separator for batches or forms. When the station finds a page with a Kodak patchcode, it concludes the batch or form. |

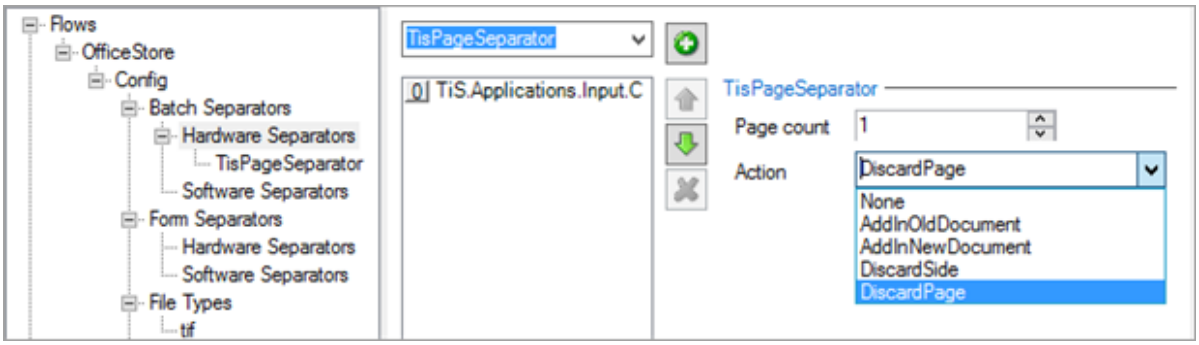
# Separator actions

When a page (or page side) is identified as being a separator or containing a separator, the station can perform one of the following actions on the separator page (or page side). You specify the action to take when you define the separator.

| Action | Description |
|---|---|
| None | Does not separate the batch or form. This is the default action. |
| AddInOldDocument | Adds the separator page as the final page of the current batch or form. |
| AddInNewDocument | Adds the separator page as the first page of the next batch or form. |
| DiscardSide | Discards the separator page; it is not included in any batch or form. If the pages are double sided, then sides are counted rather than pages, and only the separator side is discarded. The other side becomes the final page of the current batch or the first page of the next batch or form. |
| DiscardPage | Discards the separator page; it is not included in any batch or form. If the pages are double sided, then sides are counted rather than pages, but the whole page is discarded. |

# Define a hardware separator

1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Hardware Separators**.
2. From the hardware separators list, select one of the hardware separators (see Separator types).
3. Click .
   The hardware separator is added to the hardware separator list and to **Hardware Separators** in the configuration tree.




4. Select the appropriate **Action** (see Separator actions). For a page count separator (**TisPageSeparator**), you must also specify the number of pages after which the batch or form is concluded.
   If you add more than one separator, you can use  and  buttons to change their order in the separators list. The station searches the input pages for defined separators in the order they appear in this list, from top to bottom. To achieve the best performance, you should position the most probable separator types at the top of the list.
5. Click **OK** to save your changes.

# Load a sample image for testing software separators

Loading a sample image when defining software separators helps you to verify that your separator definitions will correctly detect the separator pages.

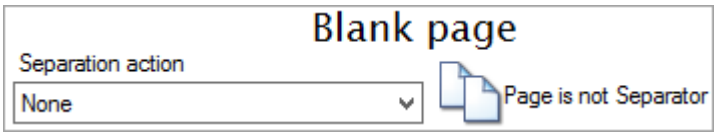
1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Software Separators**.
2. Click **Open** above the **Separators** tab.
3. Locate and select the image file you want to use and click **Open**.

   The image is displayed on the right of the window.

   For multi-page images, you can select the page to use from the selection list. Click the zoom buttons to increase or decrease the image size.

4. As you change the settings for the separator, watch for the indicator that signals whether your sample page has been successfully identified as a separator. Continue to adjust the settings until the indicator changes from **Page is not Separator** to **Page is Separator**.

   See Define a software blank page separator for a detailed example.

   If you select a different separator type to define, you may have to load a different sample image to verify your new separator.

# Define a software blank page separator

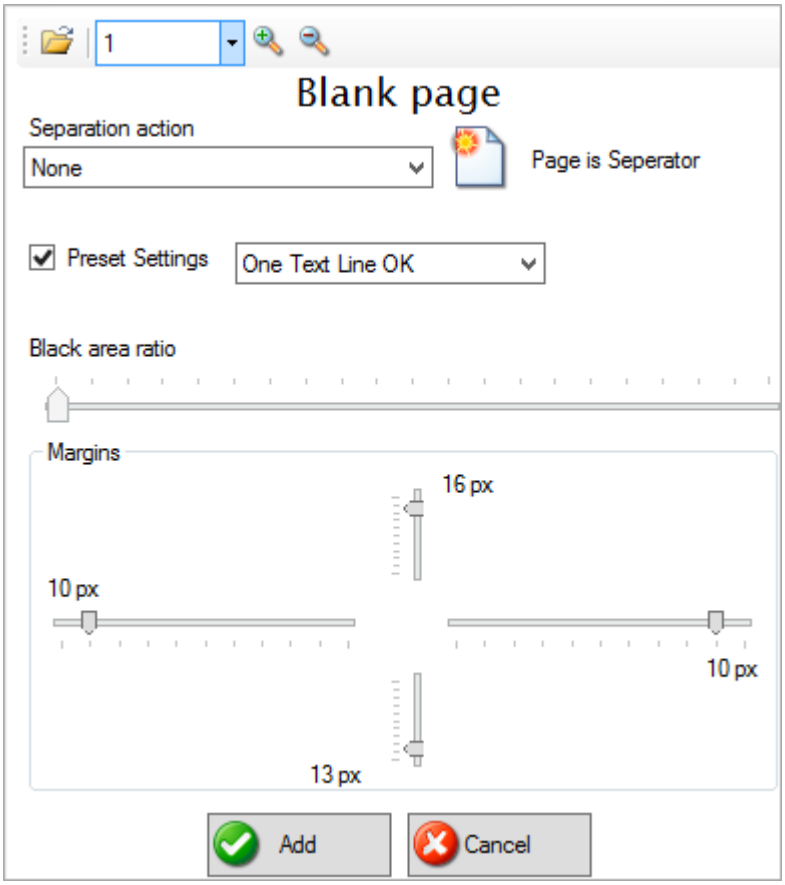
When you define a software blank page separator, you specify how white the page must be to be considered as "blank", that is, the maximum amount of black allowed on a page. You can also specify margins to exclude from the image when determining whether the image is blank.

You can detect blank pages automatically from a preset or manually from black area ratio.

To define a blank page separator:

1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Software Separators**.
2. In the **Separators** tab, click **Blank page**.
3. To test the settings Load a sample image.
4. Select a **Separation action** (see Separator actions).

5. Define blankness in either of the following ways:
   - Define blankness from a preset.
   - Define blankness from a black area ratio.
6. Optional. Use the **Margins** sliders to specify margins to exclude when determining whether the image is a blank page.
7. When the indicator changes to **Page is Separator**, click **Add**.




The new separator appears in the **Is Separator** list.


8. Click **OK** to save your changes.

## Define blankness from a preset

This example demonstrates how to define a blank page separator using a preset.

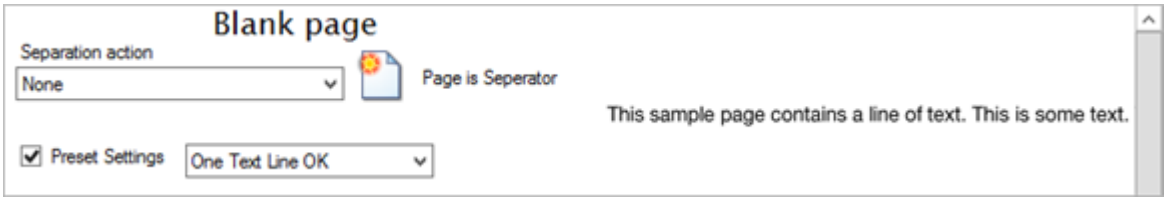
1. Select **Preset Settings** to enable the list of preset settings.
2. Select a setting from the list of preset settings to define the "blankness" threshold.

| Value | Description |
|---|---|
| Pristine White<br>Dirty White<br>Very Dirty White | Determines how "white" a page must be to be considered a blank page.<br>If you select any of these values, a page containing any text lines is not considered blank. |
| One Text Line OK<br>Two Text Lines OK | A page with one or two lines of text is considered blank. The station does not consider how "white" the rest of the page is. |

In this example, we have selected **Very Dirty White**. However, the sample separator page is "dirtier" than that, because it has a line of text. Accordingly, the separator indicator at the top right of the parameters area displays **Page is not Separator**.


If you select **One Text Line OK** the page with one text line is considered as "blank".

The sample separator page is now recognized as a valid blank page separator and the separator indicator changes to **Page is Separator**.




## Define blankness from a black area ratio

This example demonstrates how to define a blank page separator manually using the Black area ratio slider.

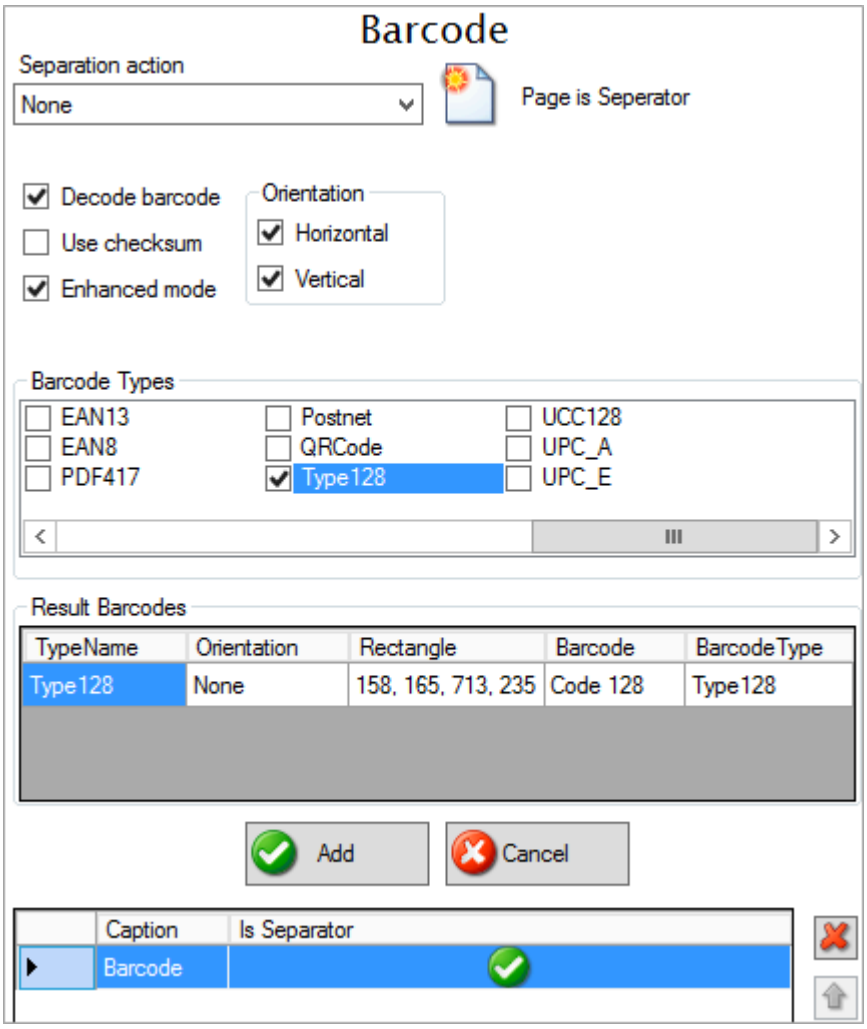
The ratio is the number of black pixels present on the image divided by the number of all region pixels. The ratios available are continuous from the lowest ratio setting on the left of the slider, which allows the least amount of black, to the highest ratio setting on the right, which allows the most amount of black. For example, if the type of blank pages you are expecting in the input will have quite a lot of black dots, you will need to drag the slider further to the right to allow more blackness.

1. Clear the **Preset Settings** check box, to enable the **Black area ratio** slider.

2. Drag the slider to the right until the separator indicator changes to **Page is Separator**.


## Define a software barcode separator

1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Software Separators**.
2. In the **Separators** tab, click **Barcode**.
3. To test the settings Load a sample image.
4. Select a **Separation action** (see Separator actions).
5. Select the settings and barcode types you want to use.




6. When the indicator changes to **Page is Separator**, click **Add**.
   The new separator appears in the **Is Separators** list.
7. Click **OK** to save your changes.

## Barcode separator settings

| Parameter | Description |
|---|---|
| Decode barcode | Specifies whether to decode the barcode. If this option is selected, runtime page information will contain the barcode value and not just the type. Currently, you cannot perform separation based on the barcode value. You can use the barcode only as a regular separator type, just like a blank page.<br>This means that you cannot use the same barcode type with different values for batch and form separation. All barcodes of the same type will be treated as the same barcode separator. |

| Parameter | Description |
|---|---|
| Use checksum | Specifies whether to calculate the barcode's checksum. |
| Orientation | Specifies whether the barcode can be horizontal or vertical or both. Correctly specifying the barcode's expected direction helps the station to find the barcode on the page faster. |
| Barcode Types | Specifies the barcode's type. Scan provide several barcode types to look for. Specifying the barcode's expected type helps the station to find the barcode on the page faster. |
| Result Barcodes | Displays the barcode's characteristics when the barcode is identified as a known barcode type. |

## Define a software patchcode separator

1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Software Separators**.
2. In the **Separators** tab, click **Patchcode**.
3. To test the settings Load a sample image.
4. Select a **Separation action** (see Separator actions).
5. When the indicator changes to **Page is Separator**, click **Add**.
   The new separator appears in the **Is Separator** list.
6. Click **OK** to save your changes.

## Edit a separator

1. In the **Configuration** window, under **Batch Separators** or **Form Separators**, click **Hardware Separators** or **Software Separators**.
2. Select the separator. For software separators, click  .
3. Make changes to the settings.
   If you add more than one separator, you can use  and  buttons to change their order in the separators list. The station searches the input pages for defined separators in the order they appear in this list, from top to bottom. To achieve the best performance, you should position the most probable separator types at the top of the list.
4. Click **OK** to save your changes.

## Remove a separator

1. In the **Configuration** window, under **Batch Separators** or **Form Separators** section, click **Hardware Separators** or **Software Separators**.
2. Select the separator and click  .

Chapter 6

# Image enhancements

Sometimes images must be graphically enhanced before you can obtain optimum results with eFlow. The Scan station provide many user customizable image enhancement filters, such as the **Deskew** filter for correcting alignment, or the **Noise Removal** filter for removing dots and specks on the image. See Enhancement filters for a complete list of the available filters.

You must define any image enhancement filters that you require for each separate eFlow application and flow. The filters are applied to each incoming image, one by one, in the order you define them.

An integrated testing tool is provided to help you customize your filters using sample images. You can see the effects of applying filters on the sample image.

There are no ideal procedures for selecting the most appropriate filters. You must use trial and error to test the effect of the filters.

Actions you perform on the sample image are not saved to its disk file.

## Load a sample image for testing filters

1. In the **Configuration** window, click **Image Enhancements**.
2. Click **Open** above the **Enhancements** tab.
3. Locate and select the image file you want to use and click **Open**.

   The image is displayed on the right of the window.

   For multi-page images, you can select the page to use from the selection list. Click the zoom buttons to increase or decrease the image size.

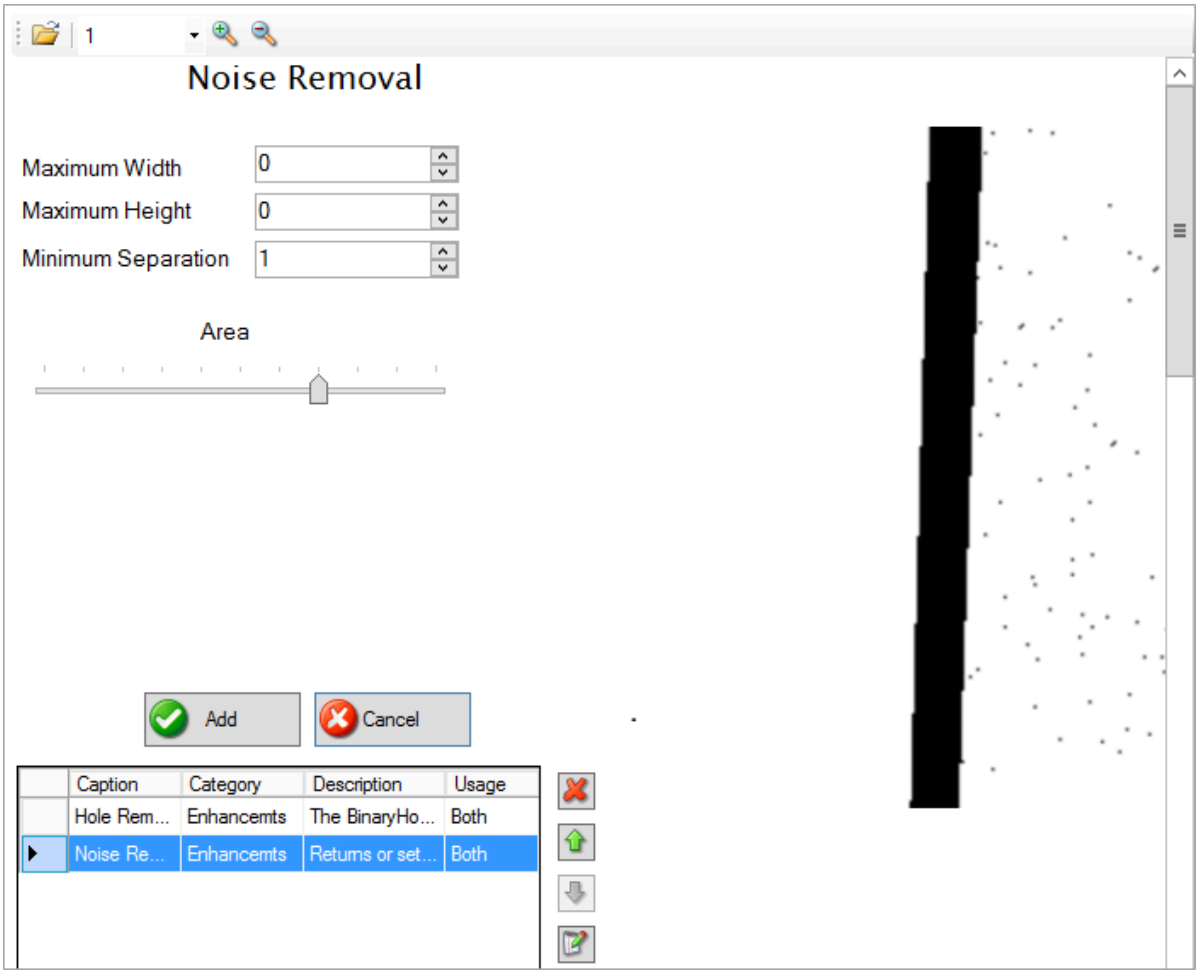
   
   

   As soon as the image is loaded, it responds to the way you adjust the filter settings
4. Click **OK** to save your changes.

## Add an image enhancement filter

1. In the **Configuration** window, click **Image Enhancements**.
2. To test the filter Load a sample image.
3. Select the tab for the type of enhancement you want to make: **Enhancements**, **Color** or **Sizing**.

4. Click the appropriate button for the filter you want to add. For example, in the **Enhancements** tab, click **Noise**.




5. Adjust the filter settings. See Image enhancement filters for information on the settings for each filter.

   As you adjust the settings, the image responds to display the effect of the changes.
6. Click **Add**.

   The filter appears in the filter list at the bottom of the screen.
7. Click **OK** to save your changes.

## Edit an image enhancement filter

1. In the **Configuration** window, click Image **Enhancements**.
2. In the filter list at the bottom of the window, select the filter, then click .
3. Make changes to the settings.

   To change the order of the filters, use  and  buttons. The filters are applied to each incoming image, one by one, in this order.

4. Click **OK** to save your changes.

## Remove a filter

1. In the **Configuration** window, click **Image Enhancements**.
2. Select the filter and click  .

Chapter 7

# Enhancement filters

This chapter describes the available image enhancement filters in the Scan station.

See Image enhancements for information on using the image enhancement filters.

## Content enhancement filters

Content enhancement filters affect the content of images. For example, they can remove lines and borders, remove "noise", such as dots and specks, or straighten a slanted image.

### Black Overscan Removal filter

The Black Overscan Removal filter removes the black area around an image when a page is scanned using the Overscan option. Unlike the Border Removal filter (which inverts the black pixels, making them white) and the Crop filter (which removes white space from around the edge of the image), the Black Overscan Removal filter removes the overscan area from your image.

This filter also reduces the physical size of the scanned image and the image file size by eliminating the black border generated by scanners with black backgrounds.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Check Inverted | Select this option to prevent overscan removal on color-inverted images. |

### Border Removal filter

The Border Removal filter detects and removes black edges that sometimes appear around images during scanning or photocopying. This filter looks for black around the edge of an image (that is, its borders) and changes the black to white. It does not change the size of the image.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Check Inverted | Select this option to prevent border removal on images that appear to be inverted. |
| Same processing values | Select this option to set all process limits to the value of the slider of the left process limit (see Process limits below). |
| Process limits | Drag the sliders to define the size limit for the border in each direction. |

## Deskew filter

The Deskew filter can be used to straighten binary or color images that show a slant from their correct orientation. The filter returns the angle that the image was deskewed. Skewing can occur if the original document was skewed when it was fed into the scanner, fax machine, or photocopier.

The Deskew filter examines the image and determines the skew angle. The skew angle is measured between the actual edge of the image data and the horizontal or vertical axis. The image data is then rotated to correct the skew angle.

Deskewing an image makes the image contents more legible and can improve OCR results. The Deskew filter can also be used, without detecting a skew angle, to rotate an image a specified number of tenths of a degree (from -44.9 degrees to +44.9 degrees), either after detecting skew externally or just to rotate the image to an arbitrary desired angle.

To achieve the best image quality after image processing and to find the optimal balance between processing speed and accuracy, you should test this filter with sample images that are similar to the real images you expect to process, and then fine tune the parameters for each filter to find the values most suitable for your document type.

The result of applying this filter is always a binary (black & white) image.

The table below describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Vertical | Select this option if the text on the pages is horizontal or is a mix of both directions.<br>Applicability: When **Auto deskew** and **Text based** are both selected. |
| Horizontal | Select this option if the text on the pages is vertical or is a mix of both directions.<br>Applicability: When **Auto deskew** and **Text based** are both selected. |
| Text based | Select this option if the source image is a text file.<br>The Deskew filter algorithm is optimized for features that look like lines of text. If an image contains graphics, the filter may incorrectly detect the skew. For images that contain graphics, clear this option.<br>If you are processing pages that contain both text and graphics areas, you must decide which type of object to use for determining skew:<br>1. Select this option if the page contains primarily text, even though it may have some tables and lines.<br>2. Clear this option if the page contains large black areas.<br>Applicability: When **Auto deskew** is selected. |
| Auto deskew | Select this option for **Deskew** to work automatically. It will use the **Vertical, Horizontal** and **Text based** parameters to decide how to best deskew the image.<br>Selecting this option disables the **Auto deskew** value.<br>Clear this option to work with **Deskew** manually. Clearing this option enables the **Auto deskew** value. |
| Deskew value | Click the **Up** or **Down** arrows to specify a rotation in degrees, clockwise or anti-clockwise respectively, to apply to the image.<br>This option is enabled if you clear **Auto deskew**. |

## Dilation filter

The Dilation filter expands the area of black objects in an image, causing the line strokes of characters to become bolder. Using this filter may improve image quality and the legibility of text. Performing dilation can increase the file size.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Horizontal | Select this option to dilate black areas in the horizontal direction. For example, the line strokes of characters get wider (that is, bolder) in the horizontal direction. |
| Vertical | Select this option to dilate black areas in the vertical direction. For example, the line strokes of characters get taller (that is, bolder) in the vertical direction. |
| Diagonal | Select this option to dilate black areas along both diagonals. Applying this option tends to have the same effect as horizontal and vertical combined. |
| Amount | Specifies the number of times to apply the Dilation filter to the image.<br>Positioning the slider at the far-left side applies the filter one time to the image. The slider has a continuous range; it does not just jump between the notches.<br>Usually, one notch to the right causes text of a standard size (10pt to 12pt) to become bolder. However, a further notch to the right causes such text to become illegible. |

## Erosion filter

The Erosion filter trims the area of black objects, causing the line strokes of characters to become thinner. Using this filter will reduce the file size, but you could lose a lot of detail from the image content.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Horizontal | Select this option to trim black areas in the horizontal direction. For example, the line strokes of characters become thinner (that is, less bold) in the horizontal direction. |
| Vertical | Select this option to trim black areas in the vertical direction. For example, the line strokes of characters become shorter (that is, less bold) in the vertical direction. |
| Diagonal | Select this option to trim black areas along both diagonals. Applying this option tends to have the same effect as horizontal and vertical combined. |
| Amount | Specifies the number of times to apply the Erosion filter to the image.<br>Positioning the slider at the far-left side applies the filter one time to the image. The slider has a continuous range; it does not just jump between the notches.<br>Usually, one notch to the right causes text to become thinner. One more notch to the right causes text lines to disappear. |

## Halftone Removal filter

The Halftone Removal filter removes a background, such as a halftone or dither pattern, from an image or a graphic object on the image.

This filter has no parameters.

## Hole Removal filter

The Hole Removal filter removes images that look like punched binder holes from the edges of the image. The algorithm searches for objects that look like binder holes around the edges of the image. Similar objects in other areas of the image are not removed.

This filter has no parameters.

The result of applying this filter is always a binary (black & white) image.

## Line Removal filter

The Line Removal filter works with lines on form-based image images. It is called "line removal" but it can be used to reconstruct somewhat damaged lines as well as completely remove lines.

The line reconstruction can be configured to reconstruct horizontal and vertical lines, "redrawing" them straight with smooth edges.

The Line Removal filter allows you to eliminate horizontal and vertical lines that are part of the image, leaving all the characters intact.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Remove | Select this option to remove lines. |
| Repair | Select this option to repair graphics and text overlapped by the removed lines. |
| Reconstruct | Select this option to remove lines, repair overlapped graphics and text, and redraw straight lines in place of removed lines. |
| Remove Form | Select this option to remove lines, redraw straight lines, and reconnect lines that were previously connected. Commonly used for tables and forms. |
| Horizontal, Vertical | The following descriptions apply to both the horizontal line group and the vertical line group. |
| Enable | Select this option to detect and either repair or delete [horizontal/vertical] lines. The values of the other [horizontal/vertical] line detection parameters are ignored if this parameter is disabled. |

| Parameter | Description |
|---|---|
| Straight line | Select this option to use the straight-line processing algorithm on [horizontal/vertical] lines.<br>The optimized straight-line processing algorithm provides faster processing of straight lines that are longer than 100 pixels. The algorithm is particularly well-suited for forms and light paper.<br>• When enabled, the filter uses the height or width of the bounding rectangles around line-like objects to determine if that object is a line.<br>• When disabled, the filter breaks the line-like object into small segments and uses the curvature, maximum gap, and a number of fixed parameters to determine whether the segments make up a line.<br>When this parameter is enabled, all other line processing parameters except Minimum Length are ignored. |
| Minimum Length | Specifies the minimum detectable length of [horizontal/vertical] lines.<br>If a "line" is shorter than this minimum length, it is not considered a line.<br>• Specify a smaller value to detect and process more line-like objects.<br>• Specify a larger value to detect and process fewer line-like objects.<br>Units: Pixels<br>The default is to operate on only those lines that are longer than 50 pixels. |
| Maximum Gap | Specifies the maximum white space allowed between two [horizontal/vertical] line-like objects for them to be considered a single line.<br>If a gap is longer than this maximum, the two line-like objects are not considered a single line.<br>Units: Pixels<br>This property is not used when Straight line is enabled. |
| Curvature | Specifies the maximum deviation from a straight line allowed for a [horizontal/vertical] line-like object to be considered a line.<br>If a deviation is greater than curvature, the line-like object is not considered a line.<br>The left-side of the slider is a lower curvature. A lower value for this property causes the filter to identify only lines with a smaller curvature, and so will operate on a smaller number of curved lines.<br>The right-side of the slider is a higher curvature. A higher value for this property causes lines with greater curvature to be still identified as lines, and so will operate on a larger number of curved lines.<br>Choose a curvature value that operates on unwanted lines while preserving other desirable features on your pages.<br>This curvature setting is fine tuning: There is a relatively small difference between the minimum curvature and maximum curvature.<br>Units: Pixels<br>This property is not used when Straight line is enabled. |

## Noise Removal filter

The Noise Removal filter searches for noise in the image and deletes it. Noise appears as dots and specks on the image, and the filter helps to clean them off. The parameters teach the filter what is considered as noise. Take care to not lose essential detail from the image content, which the filter may accidentally consider as noise.

The result of applying this filter is always a binary (black & white) image.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Maximum Width | Specifies the maximum width of a black area that is considered as a speck of noise.<br>Units: Pixels |
| Maximum Height | Specifies the maximum height of a black area that is considered as a speck of noise.<br>Units: Pixels |
| Minimum Separation | Defines the minimum separation between a noise object and other non-noise parts of the image.<br>Values:<br>**0:** Removes all noise objects that fit within the Maximum Width, Maximum Height, and Area property settings. This may cause small text elements on the page, such as broken characters, punctuation, and the dots on the letters i and j, to be removed.<br>**>0:** Preserves elements that would otherwise be considered noise that occur in the vicinity of text characters. This may improve readability and OCR accuracy. |
| Area | Specifies the maximum percentage that an object can occupy of the above area (defined by the above width and height) and still be considered as noise.<br>This property is especially useful if you want to detect long narrow objects that may appear both vertically and horizontally on a page, such as lines, decorative banners, and highlight areas.<br>For example, to remove colored banners that are either 5" x 1" or 1" x 5", you could set Maximum Width and Maximum Height to 5 inches. However, that means a 5" x 5" picture would also be detected as noise and removed. To avoid this problem, set Area to 20 so that only the banner area is detected as noise, regardless of its orientation.<br>Unit: Percent |

## Invert Image filter

The Invert Image filter inverts an image. The black becomes white, and the white becomes black.

This filter has no parameters.

## Skeleton filter

The Skeleton filter reduces black objects in an image to one-pixel-thick skeletonized versions. Using this filter can reduce file size, but it can seriously distort the image. It should be used with caution and is usually only appropriate when performing certain types of OCR.

This filter has no parameters.

## Smoothing filter

The Smoothing filter removes bumps and spurs that appear on text characters or graphic objects in an image. The filter looks for any pixel that is surrounded by five or six other connected pixels of the opposite color, and then inverts that center pixel based on the filter configuration. Smoothing is a good way to improve legibility without losing a lot of image details.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Trim fast | Select this option to remove black noise pixels before removing white ones. If this option is not selected, white noise pixels will be removed before black ones. |
| Corner black | Select this option to remove black noise pixels from the corners of objects. |
| Corner white | Select this option to remove white noise pixels from the corners of objects. |

## Threshold filter

The Threshold filter can be used to convert a 24-bit color or gray scale image to a binary image. All the pixels in a color image that are darker than the threshold specified by the Brightness and Contrast properties are converted to black, and all the pixels that are lighter than the threshold are converted to white.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Brightness | Specifies the brightness threshold.<br>The slider's left-hand side is a darker threshold, and the right-hand side is a lighter threshold. The more you drag the slider to the left, the more the threshold becomes a darker threshold, so more of the page's dots are considered brighter than that threshold and they are converted to white. If you drag the slider far enough to the left, at some point the whole page becomes all white.<br>The more you drag the slider to the right, the more the threshold becomes a lighter threshold, so more of the page's dots are considered darker than that threshold and they are converted to black. If you drag the slider far enough to the right, at some point the whole page becomes all black. |
| Contrast | Specifies the contrast threshold.<br>Contrast is the ratio of the luminance of the brightest color in the image to that of the darkest color. If pure white is present, the brightest color is the white. If pure black is present, the darkest color is the black.<br>This parameter is used the same way as for brightness. |
| Dither | Select this option to dither the image before applying the Threshold filter.<br>Dither is an intentionally applied form of noise used to randomize the sampling error created from digital sampling. The resulting image is expected to be smoother and more true to the original. |
| Preserve text | Select this option to specify that text is more important to preserve. |
| Preserve image | Select this option to specify that images are more important to preserve. |

| Parameter | Description |
|---|---|
| Preserve barcode | Select this option to specify that barcodes are more important to preserve. |

# Color Enhancement Filters

Color Enhancement filters modify the colors in an image. Currently, only the Color Dropout filter is available, which replaces one color with a different color.

## Color Dropout filter

The Color Dropout filter transforms specified colors in an image into other colors. The filter maintains a list of color mappings to make when it runs.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
|  | Opens a **Color** selection box. Use this to select a color. When you click **OK**, the color is added to the list. |
|  | Removes the selected filter. |
| Magnitude | The radius of the color sphere for the selected color. The color sphere object is a dimensional model that uniformly arranges color in space. |

# Size Enhancement Filters

Size Enhancement filters modify the geometry of an image page. For example, they can rotate or scale the page.

## Rotation filter

The Rotation filter rotates the image. The difference between the Rotation filter and the Deskew filter is that the Deskew filter is used for rotating small angles only.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Apply | Apply the rotation to both sides of a page.<br>Applicable to: Double-sided pages. |
| Rotation Method | You can allow the system to decide how much to rotate the image, or you can manually predefine the rotation. |
| Auto detect | Select this option to automatically detect if the image requires rotation and, if so, rotate it to straighten it up.<br>Clear this option to enable the **Fixed angle** option. |

| Parameter | Description |
|---|---|
| Mirror | Flips the image about a vertical axis whose angle is given by Fixed angle below. This operation has no effect if Fixed angle is 0. |
| Fixed angle | Specifies the angle of a clockwise rotation of the image. If you also click **Mirror** after setting this angle, you can get the rotation with a mirror flip. |

## Scaling filter

The Scaling filter resizes images while preserving the original aspect ratio. After you specify the desired width and height, the image area is resized so that it fits within those boundaries, while maintaining the aspect ratio.

This operation does not just fit the page into the viewer; this permanently resizes the image and is preserved in the collections sent to the workflow.

The following table describes the parameters you can adjust for this filter.

| Parameter | Description |
|---|---|
| Standard Sizes | Resizes the image to fit the page size you select, either making it larger or shrinking it, as appropriate. |
| Custom size | Resizes the image to a custom size. |
| Width | Specifies the width of the scaled image. |
| Height | Specifies the height of the scaled image. |

Chapter 8

# Parameters and options

This chapter describes the parameters and options available in the Scan station Configuration window.

## Parameters

The following general parameters for the Scan station are available in the **Configuration** window. These parameters are relevant to all flows.

| Parameter | Description |
|---|---|
| Active Function Keys | Shortcut key combinations for running custom code blocks. This is a common feature in eFlow stations; however, use it with care in Scan station, which are specifically intended to be run in an automatic mode. |
| Idle Interval | Specifies the length of time that the station must be idle to cause the Idle event to be fired. By default, this event has no effect on the work cycle of Scan. |
| Send Batch Automatically | Specifies whether Scan automatically sends collections to the eFlow workflow as soon as they become ready.<br>If set to False, you must click the **Send all** button to send collections to the workflow. |
| Timer Interval | Period of the Timer event. By default, this event has no effect on the work cycle of Scan. |

## Options

The following options are available for controlling the Scan station user interface are available in the Configuration window.

| Option | Description |
|---|---|
| Enable offline mode | If set to True, allows continued input of images even if the connection with the eFlow server is temporarily lost. The images are sent to the server when the connection is restored.<br>This option is only available in the Design module station configuration. |

| Option | Description |
|---|---|
| Fast scan mode | If set to True, speeds up scanning.<br>If set to False, causes the image thumbnails to be displayed immediately while scanning, not only at the end of batch. However, this slows down the station.<br>When scanning in duplex mode, always set the Fast scan mode option to False to avoid Out of memory errors. |
| Preview delay | Specifies how often an image should be shown in the page viewer when the station is running. Displaying an image slows down processing. In addition, a user can only observe the images at a much slower rate anyway. For example, if the value is set to 7 then the image is displayed only every 7th image. |