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# *Batch Processing in Picture Window*

by Kiril Sinkel

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## *Introduction*

Picture Window's new batch processing facility allows you to apply a series of operations to a group of images. Basically, you select the images, set up a workflow and click the Go button. Picture Window takes it from there, applying the workflow to each of the images. The process is performed in the background, so that you can go on and do other work in Picture Window while it is running.

Batch processing is useful in many situations. For instance, you can use it for transferring images from your camera memory card to your computer, making image adjustments, renaming and saving the images, and perhaps creating an album or an index print, all automatically. Batch processing is also useful for many routine tasks -- such as resizing a group of images, sharpening them, adding copyrights or keywords to their EXIF comments, changing their file type and many other operations.

### *A Workflow Window*

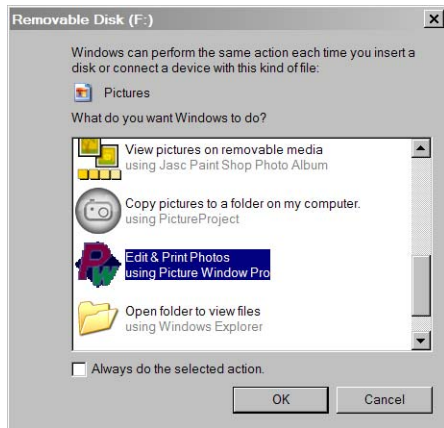


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## *Workflow Window*

The batch facility uses a new type of window called the Workflow window. The window is split into two areas. The top area displays thumbnails of the images to be processed. The bottom area displays a workflow — a chain of operations that are to be performed.

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## Launching the Workflow Window

You can launch a new workflow window from the main menu or by clicking the workflow toolbar button.  A workflow window is

also opened automatically from the autoplay menu. This is the menu that Windows displays when you insert a camera memory card or CD. (Click [here](#) if Windows does not display the menu.) The menu allows you to choose an application to handle the card or CD. When you choose Picture Window, a new workflow window is opened. It displays the thumbnails of all the images on the card or disc.

*Autoplay menu. This menu is displayed by windows when you insert a mass storage device such as a camera card.*

## Thumbnail Section

The thumbnail section displays thumbnails of all the images that can be processed by the workflow. You can select them by clicking the Add button and choosing them from the open file dialog. However the most convenient way is to drag them from the browser window. You can drag individual images or an entire folder. If you drag a folder, it is ‘cracked open’ and all the images in the folder and its sub-folders are placed into the thumb section. The same thing happens when you open the Workflow window from the Autoplay menu — all the images on the camera card are displayed, regardless of where they are located. (A **Remove** function accessed from the right-click menu let’s you remove images from the workflow.)

While the workflow thumb display looks similar to the Browse display, there is one big difference worth special mention. The images in the thumb section do not necessarily reside in the same folder. In fact, they can be located anywhere on your system. This allows you to perform a batch operation on any group of images, regardless of where they are located.



*Thumb Section Buttons*

## Thumb Section Operations

The thumb operations are controlled from a toolbar. The button functions are:


- Refresh thumb display
- Select all images.
- Clear selection
- Create an album
- Open selected images for editing
- Delete selected images from storage
- Play images in a large window
- Toggle ascending/descending sort order
- Display options menu



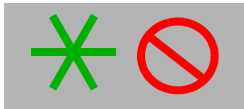
*A Play Window*

## Previewing Your Images

Once you get the images into the workflow window, you may want to preview your images at a larger size for more critical evaluation. The

**Play** function, launched by the  button, does exactly that. It displays the images sequentially in a separate window in ad hoc slide show fashion. It has a *triage* function, letting you mark images as thumbs up, thumbs down or leave them unmarked. These marks can later be used to apply the workflow just to images marked a particular way.

The play window has control buttons under the image to playback, display duration, select which images should be included and mark the images. In addition, there is right click menu for rotating the image and displaying its EXIF information. (You can also edit the EXIF description, artist and copyright fields.)



*OK and Reject triage marks*

### Triage

There are two triage marks. A red **reject** mark is used to tag images you do not want to include in further processing or may even want to delete. The green **OK** mark is used for images you want to particularly tag for further processing. You tag the images by clicking the appropriate button in the play window or by using the right-click menu in the thumbnail display. The image is marked in the upper right corner. You can change your mind anytime and retag the image or clear the tag.

Later, when you run a workflow, you can specify whether it should be applied to all images, all but rejects or OK images only. Tags are in effect only during the lifetime of a workflow window and are not stored with the image.



*Playback Buttons*



*Duration:  
3, 5, and 8  
seconds*

### Playback controls

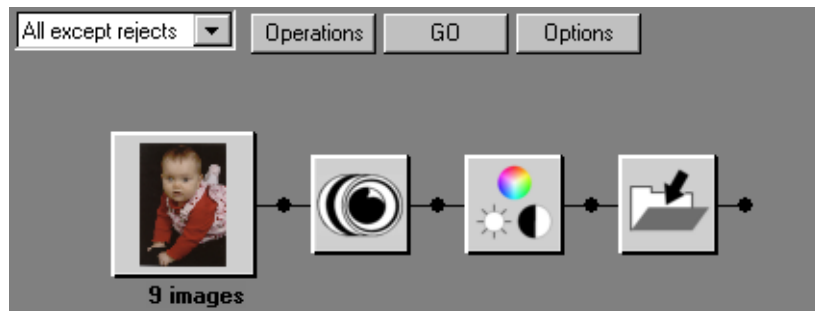
Playback buttons are similar to those found on CD players. Left to right, they are **Play, Pause, Stop, Fast Reverse, Previous, Next, and Fast Forward**. The last button opens the image for editing. (Alternatively, you can open an image by double-clicking it.)

Slide duration can be set to 3, 5 or 8 seconds. Once all images are displayed, the sequence repeats from the beginning. Stop, Pause or the Previous and Next buttons stop automatic advance and put the player into manual mode.

A dropdown dialog controls which images are displayed. For instance, if you set it to **All but Rejects**, rejected images are removed from the sequence as you mark them.

## Creating Workflows

A workflow is a chain of operations performed sequentially on one or more images. Workflows are represented by a series of **widgets**, small icons that each control an operation. Available widgets include selected Picture Window transformations and special operations designed just for workflow processing.



For example, the workflow above consists of four widgets.

- **Input widget:** ‘Holds’ the images to be processed by the workflow. The images to be processed are determined by selecting one of the criteria on the drop-down menu above the input widget.  
The image displayed in the input widget is the prototypical image that will be used to set parameters of the widgets in the chain. The image may be changed by using the mouse wheel.
- **Sharpen widget:** The sharpen transformation.
- **Levels and Color widget:** The Picture Window Levels and Color transformation that controls brightness, contrast, saturation and color balance.
- **File Save widget:** A special widget that controls the file type, destination folder and file name of the output image. Images can also be optionally resized.

The flow must be terminated by an output widget, such as the File Save widget above. This is because the output widget specifies where the resulting images should go. Without an output widget, the images created by the workflow would be inaccessible.

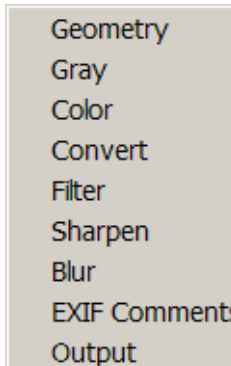
## Setting up a Workflow

Let’s look at how a new workflow is created.

### The Input Widget

When a new workflow window is displayed, it contains just an input widget. The input widget is the container for the images that are to be processed. You can control which images are selected by choosing the appropriate option from the drop-down menu.

#### Operations Menu



### Adding Widgets to the Workflow

You can add other widgets to the end of the workflow either by clicking the Operations button or right-clicking in the window. In either case, the operations menu is displayed. If you have used Picture Window before, you will notice it has the same categories as the Transformation menu. Indeed, many of the operations are exactly the same. In addition, there is an Output heading. This contains widgets that control how the new images are saved to disk, saved as an album or displayed.

To reproduce the workflow shown above, select **Sharpen**, **Gray/Levels and Color**, and **Output/Rename-File Save**. Each widget is added in turn. You can also insert widgets into the workflow by right-clicking on the connector between widgets. You can delete a widget by selecting it and pressing the **Delete** key.

#### Setting the Brightness curve widget

### Setting Widget Parameters

Next you must set the parameters for each widget. To do so, double-click on each widget in turn. The widget's dialog is displayed. If it's a transformation widget—



one that adjusts the appearance of an image—the image and preview windows are also displayed. (No image is displayed for non-transformation widgets such as File Save.) Set the dialog’s parameters as required and click OK. Notice that the widget now displays a check mark. This shows that its parameters have been set.

You must set all widgets before you can execute the workflow. While you will generally use the same image for all the widgets, there is no requirement that you do so. The image that is used can be changed by selecting the input widget and advancing the images with the mouse wheel.

### **Executing the Workflow**

Once all the widgets are set, you can execute the workflow by clicking on the **Go** button. The images are processed through the workflow, As each image is completed, it is marked with a check mark.

The purpose of the check mark is to help you track which images are done. For example, if some of the images are under exposed while others are not, you may want to process them with different settings from the rest of the images. You can do that by processing just the dark images with workflow parameters set to lighten them. Then you may change the workflow parameters and process the rest of the images.

For that reason check marked images are not processed when a workflow is executed, even if they meet all the other selection criteria. However, you can reprocess these images if you manually clear the check marks, using the right-click menu.

If an error is encountered during the processing of an image, the image is marked with a red x instead of a check mark. You can determine the cause of the error using the **Display Error** option of the right-click menu.

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## *Widget Reference*

Widgets fall neatly into three categories:

- **Transformation Widgets:** These widgets modify the image itself, performing operations such as brightness adjustment, setting color balance, sharpening, etc. Most are identical or nearly identical to transformations and so are not documented separately. However the Crop-Add Border, Resize and the Text widgets have some features not shared by their respective transformations. These features are discussed here.
- **Utility Widgets:** Currently there is one widget in this category — the EXIF Comment widget. It lets you set the EXIF description, author and copyright fields for the images in the workflow.
- **Output Widgets:** These are widgets which save, print, or otherwise output the images processed by a workflow. Every workflow must end in an output widget. Otherwise the processed images would be inaccessible.

There are three output widgets—a Copy-Move widget, Save File widget and an Album widget. The Copy-Move widget copies or moves files without opening them. The Save File widget is used to save files to disk and also has features for resizing them, converting them to different file types and automatically assigning file names. The Album widget inserts images into an album. After workflow processing is complete, the album is ready for review, printing and saving.



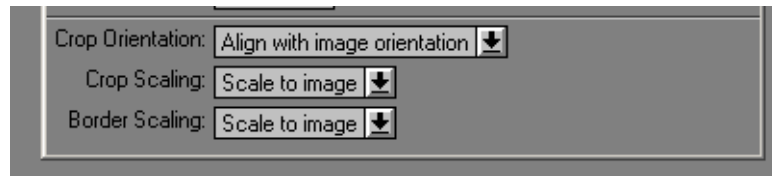
## *The Crop-Add Border Widget*

The Crop-Add Border widget allows you to crop images and add borders to them. For example, you can use it to crop all your images to a common aspect ratio (such as 8 x 10, for instance). The crop orientation can be set to automatically match the orientation of the image. You can also use the widget to add a colored or textured border to the image. In fact, since your workflow can include several Crop-Add Border widgets, you can easily create a complex border built-up by several widgets.

The basic cropping and border functionality is the same as the Crop-Add Border transformation. The major difference is that the widget allows you to specify how the cropping and borders you have selected will be applied to images of different sizes and aspect ratios. These controls are described below.

### Crop-Add Border Widget Dialog

*Special Crop-Add Border widget controls let you specify how settings are to be applied to images of different sizes.*



Most of the Widget and Transformation dialogs are the same. Only the additional widget controls are described here.

The additional controls provided by the widget specify how the crop and border settings are applied to images of different sizes and orientation. Three parameters are used:

- **Crop Orientation:** There are two options. **Align with image orientation** turns the crop rectangle when the image has the opposite landscape or portrait orientation from the original input image. **As is** maintains the original crop orientation. This setting applies only if you have chosen a fixed aspect ratio.
- **Crop Scaling:** The options are **Scale to image** and **Don't scale**.

The first option scales the crop rectangle to the image. If Aspect ratio is set to **Arbitrary**, each crop boundary is scaled individually. If Aspect ratio is set to a specific ratio then the crop rectangle is scaled using the ratio of heights or widths (the larger ratio is chosen) to maintain the prescribed aspect ratio.

The **Don't scale** option maintains the same absolute crop rectangle size and position.

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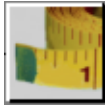
### The Crop-Add Border Widget

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In all cases the crop rectangle is always constrained to lie within the image. If it is larger, the rectangle is reduced until it fits. If a specific aspect ratio is selected, the ratio is maintained when the rectangle is resized.

- **Border Scaling:** The options are **Scale to image** and **Don't scale**.

In the first case the borders are scaled to the square root of the ratio of the image areas. In the second case, the absolute number of pixels is used.



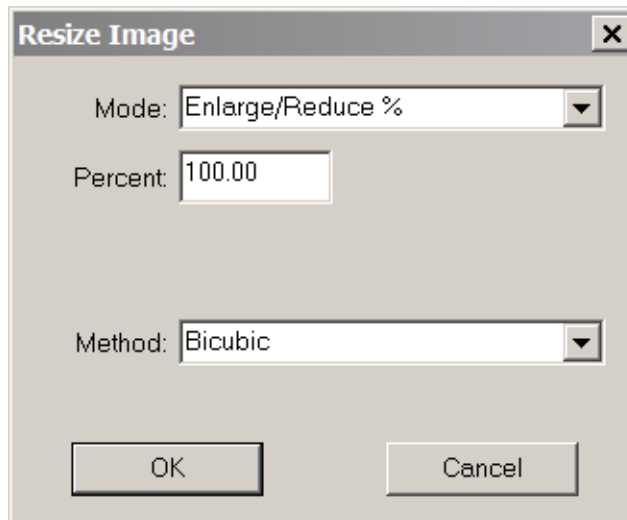
## *The Resize Widget*

The Resize widget is used to make an image smaller or larger. You may want to make an image smaller to reduce its file size so that it can be e-mailed more easily or used on the web. On the other hand, to print an image in a large size, you can choose one of the advanced resampling techniques to wring out all the quality possible. Resize works by resampling the image and actually adds or removes pixels.

Because resizing generally softens the image, it is a good idea to add a sharpen operation to the workflow after resizing.

### *The Resize Widget.*

*This is the widget version of the **Resize** transformation,*



## **Resize Widget Dialog**

### **Mode**

The Resize widget **Mode** control allows you to express the size of the output image in a number of ways:

**Enlarge/Reduce%:** The image width and height is resized by a specified percentage.

**Bounding Rectangle:** The image is enlarged or reduced so that it fits within a specified rectangle. The image's aspect ratio is not changed. This mode is useful for resizing an image so that it can be displayed on a screen of a particular size.

**Fill Rectangle:** The image is enlarged or reduced so that it fills a specified rectangle. The image's aspect ratio is not changed. The image is not cropped, so one of the dimensions may be larger than that of the rectangle's. This mode is useful for resizing an image so that it fully fills a screen of a particular size.

**Fixed Width:** The image is resized to a specified width, in pixels. The image height is changed proportionally.

**Fixed Height:** The image is resized to a specified height, in pixels. The image width is changed proportionally.

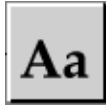
**Fixed Width/Height:** The image is resized to a specified width and height, in pixels. Since both width and height are fixed, the image's aspect ratio may change.

**Total Image Size:** The image is resized to a specific number of pixels, specified in megapixels. Aspect ratio is not changed.

### Method

The Method controls how the resizing is done. The methods are arranged roughly in order of quality, from **Nearest Neighbor** which is fast but produces fairly crude results to the **Lanczos** methods which produce the best results but take the longest to apply. The **Bicubic** method provides high quality coupled with good performance and so is the best choice for most purposes.

For a thorough discussion of the methods and resizing in general, see the [Image Resampling](#) white paper.



## Text Widget

The text widget operates in the same way as the transformation. However, since images in a workflow may have different sizes, the widget version has two additional controls to scale and position the text intelligently.

- **Scaling:** This control gives you the option of scaling the text according to the size of the image. If scaling is selected, the size of text, the size of the background rectangle and their positions are scaled in proportion to image size. To be precise, the scaling ratio is calculated as the square root of the area of the current image divided by the area of the prototype image.
- **Position Reference:** You can control how the text will be positioned on images that have a different size or proportions compared to the prototype image. You can set the reference point to any one of the image corners or to the center of the top or bottom edge. (If **Scaling** has been chosen, the position is scaled in proportion to image size.) Generally the Position Reference should be coordinated with alignment. For instance if you set the reference to **Top Left** or **Bottom Left**, set alignment to **Left**.

You can also choose **Proportional**, which positions the text in the same relative place as you have positioned it on the prototype image.

### Captioning images

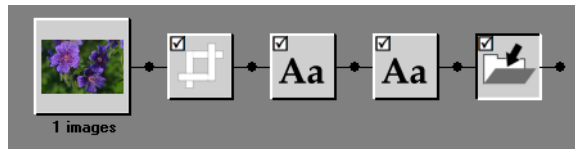
The workflow at right is used to caption images.

It first creates a border around the image. It then uses the Text widget twice to add a filename at the lower left and date at the lower right.

The filename and date text use macros, so each image is labelled automatically.

Alignment and position reference settings for the filename were *Left* and *Bottom Left*, respectively. Similarly settings for the date were *Right* and *Bottom Right*.

The size and scaling settings of the border and text were coordinated. Scaling was set the same way on the border and both text widgets. The border size was made large enough to accommodate the size of the text.





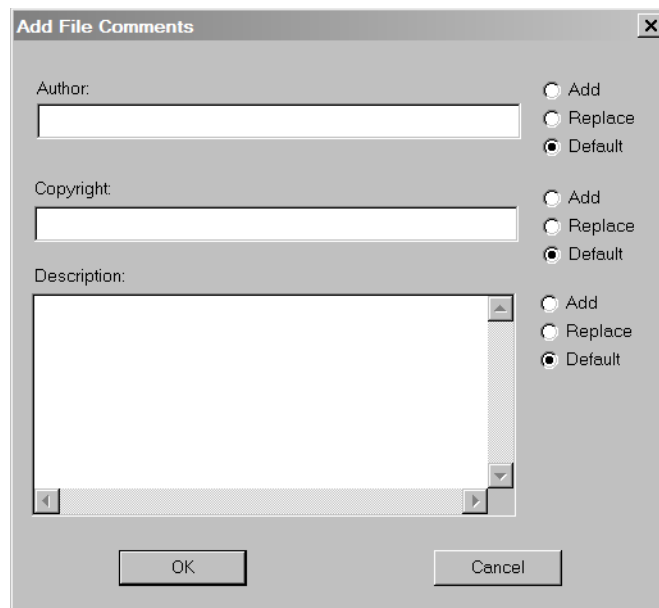
## *The EXIF Comments Widget*

The comments widget is used to edit the EXIF description, artist and copyright fields of all the images in the workflow. For each of the fields, you have the option

- **Add:** Add text to whatever is already in the field. This is useful to add keywords to descriptions. The new text is appended to the end of any text already there.
- **Replace:** This option deletes any existing text and replaces it with new text.
- **Default:** This option adds the new text only if the field is currently blank.

The EXIF Comments widget is the widget version of the **Add Comments** dialog that can be accessed through the right-click menu.

You can use the Comments widget and the Add Comments dialog together. For example, a few images in a workflow require a custom comment while the rest can use a standard one. You can add the comments efficiently by first using the **Add Comments** dialog to apply the custom comments. Then apply the standard comment to the rest of the images using the widget and the **default** option.



### *The EXIF Comments Widget.*

*This is the widget version of the **Add Comments** dialog available from the browser's right-click menu.*



## *The Save File Widget*

The Save File widget specifies where images will be stored. It can also be used to resize the image, change its file format and rename it. Here is a description of its fields:

**Output File Type:** Can be set to unchanged or a type such as tiff, jpeg, etc. If the original file is one of the types that cannot be written by Picture Window (PhotoCD and RAW), it is saved as a tiff.

**JPEG Quality:** The compression quality of images saved in jpeg. Lower quality results in greater compression.

**Resize:** Resizes the file. Choices are in megapixels. This is primarily used to make files smaller so that they can be e-mailed or used on a web page.

**Destination Folder:** The folder in which the new image should be saved. If the folder does not exist, it is created. There are several ways to set the folder. You can use the **Browse** button to choose an existing folder. You can also provide an

**Save Image** [X]

Convert File

Output File Type: [Unchanged] JPEG Quality: [100 %] Resize (max size): [Unchanged]

Destination Folder: [ ] [Browse] [Macro]

Rename File

Root Name: [Macro] [ ] + [Seq Number] [001]

On duplicate name:  Generate unique name  Overwrite file

Display in Workflow Window: [None] [New]

Delete original file after saving

[OK] [Test] [Cancel]

expression that will be expanded into a folder name. Available expressions are displayed when you the **Macro** button. (See the Macro section below.)

**Rename File:** You can use the name of the existing file or rename it. If the file name is simply a sequence number assigned by a digital camera, this feature lets you assign it a more meaningful name. To create your own name, check the Rename File checkbox and fill in the root name field.

**Root Name:** The root name can be a constant string which characterizes the images, a macro expression or a combination of the two. Again, you can build the macro expression by clicking the **Macro** button.

After you have filled in the folder and file name fields, you can test the file naming you have specified. This is especially recommended for checking macros. To check the naming, click the **Test** button. The name that will be assigned to the current image is displayed. Check it carefully for syntax errors. Particularly check for missing or double \ characters,

**Seq Number:** Sets the starting sequence number. To make every file name unique, the root name is concatenated with a sequence number.

**On duplicate name:** Specifies what should be done if a file of a particular name already exists. Your choices are to have Picture Window modify the name to make it unique or to overwrite the file.

**Delete original file:** Once the new file is saved, you can choose to delete the original. This is useful when you are copying images from a camera card to your hard drive. If an error is detected when the new file is created, the old file is not deleted.

**Display in Workflow Window:** You can display the output files in a new or existing workflow window. This is useful if you want to work with the files further.

Click the **OK** button to save your settings and end the dialog.

### Macro Menu

Create Year  
Create Month (numeric)  
Create Month (abbr.)  
Create Day  
Create Date (y-m-d)  
Create Time (hr-min-sec)

Modify Year  
Modify Month (numeric)  
Modify Month (abbr.)  
Modify Day  
Modify Date (y-m-d)

Filename  
"My Pictures" folder  
Current folder (.\)  
Previous folder (..\)

## Building Macro Expressions

The Destination Folder and Root File Name can be specified by using any combination of text and macro expressions. For instance, let's say you have shot pictures Bryce Canyon. You may choose to place them in a destination path as follows:

```
%MyPictures%\%CreateYear%\%CreateMonthNum%\BryceCanyon\
```

When the images are stored, the macro expressions will be expanded.

Dates are expanded according to the date information in the file being saved. For create dates, the EXIF date is used if available. Otherwise the Windows file create date is used. Modify dates are always Windows file modify dates. To make dates

sort in chronological order, they are output in year, month, day order. Leading zeros are used for month and day. Constant strings such as 'BryceCanyon' are transferred verbatim. So the above expression would translate to an actual pathname like this:

C:\Documents and Settings\Username\MyDocuments\MyPictures\2005\09\BryceCanyon

The macro %MyPictures% is expanded to the full MyPictures path name in the current environment. The expressions ..\ and .\ for previous folder and current folder are interpreted with respect to the image's original location.

## Using Multiple Save File Widgets

If you want to make more than one version of a file, you can use additional Save File widgets. For example you may want to create one full-resolution file for archiving and a second resized file for sending photos via e-mail. You can do so by chaining two Save file widgets. Of course, the second widget will receive the file processed by the first widget. That means the first widget should save the file at full resolution while the second widget can downsize it for e-mailing. If you reversed the widgets, you would wind up with two downsized files. You can also use Save File widgets in the midst of a workflow if you want to save intermediate results.



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### *Copy-Move Widget*

This widget is similar to the Save File widget, except that it copies or moves a file without opening it. It is used primarily to archive files directly from a camera memory to disk storage. Like the Save File widget, it can rename a file and store it in any existing or new folder. Since it does not need to open a file, it can store files in any format, including encrypted files and RAW files that Picture Window cannot write. Copying or moving a file also does not change the file modify date and it does not cause jpeg files to be resampled. On the other hand, since no changes can be made to the file, the image cannot be resized nor converted from one format to another.

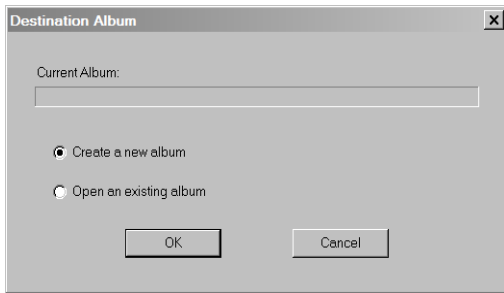
To use the Copy-Move widget dialog, see the [The Save File Widget](#).



## *The Album Widget*

The Album widget places images into an album, providing an easy way to print images produced by a workflow. The widget can be used to create a new album or to open an existing album. After the workflow is completed, you can review the album, make any manual changes that you like and then print the album or save it.

The album widget saves the images it places into the album in the same folder as the album. That insures that the album has its own copy of the images. This also means that the album widget is a terminal widget -- it can be used as the last widget in a workflow.

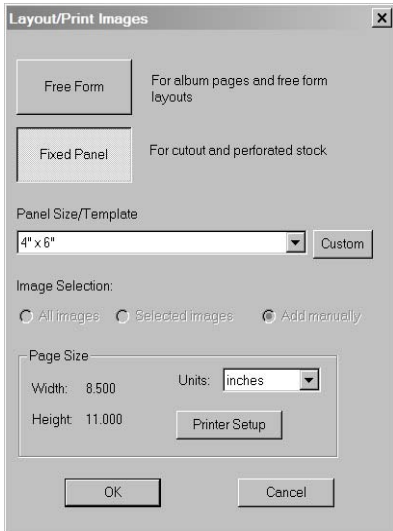


### **Album Widget Dialog**

When you double click the Album widget, the dialog on the left is displayed. It allows you to either create a new album or use an existing one.

If you open an existing one, a file dialog letting you choose the album you want to use is displayed. If the album is already open, it is simply linked to the workflow.

If you choose to create a new album the standard album Layout dialog is displayed.



### **Album Layout Dialog**

The layout dialog lets you choose the page size, landscape or portrait orientation and image panel size. Currently only the Fixed panel album mode is supported. The free mode cannot be used within a workflow.

However, if you want more flexibility in laying out the images, you can convert to the free mode after the album is created. Initially the images will be positioned exactly as they were in the fixed mode. However you will now be able to place them anywhere on the page.

After you complete the dialog, a File Save dialog is displayed. Use it to assign a filename to the new album. The images that will be placed into the album will be saved in the same folder as the album.

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## *Anomalies and Problems*

### **Autoplay menu is not displayed**

Usually when you insert a mass storage device such as a camera memory card or a CD, Windows scans the device for media files such as images and music. If it finds them, it displays a menu of programs that can handle that type of input.

However Windows allows you to set a particular program as the handler for each type of media. In that case, the program is launched immediately and the autoplay menu is bypassed.

Here is how you can restore display of the autoplay menu:

1. Open MyComputer.
2. Right-click on a mass storage device such as a camera card or CD. A menu is displayed.
3. Select Properties from the menu. The dialog is displayed
4. Select the Autoplay tab.
5. From the drop-down list, select the desired media type.  
Set the **Prompt me each time to choose an action** radio button.
6. Select the Mixed media type and set the **Prompt me each time to choose an action** radio button again.
7. Click OK to complete the dialog.

You can also use this dialog to set a particular program as the default handler for a media type.