

## PolyView Help Contents

PolyView is a multi-threaded 32-bit Microsoft Windows NT application which provides viewing and image manipulation support for GIF, JPEG, TIFF, photo-cd, and Windows and OS/2 8 and 24 bit BMP files. PolyView was written and tested using Microsoft Windows NT Version 3.5.

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## **Registering PolyView**

PolyView is distributed as shareware. To register your copy, send \$20.00 to:

Polybytes  
3427 Bever Avenue S.E.  
Cedar Rapids, Iowa 52403

Registered users will receive product update notifications and problem assistance.

## **Support**

All users are encouraged to communicate praise and problems via e-mail to:

PolyView@aol.com

Every effort will be made by Polybytes to provide satisfaction.

## Execution Options

### Running PolyView

PolyView.exe is the executable file which contains the implementation of the PolyView application. PolyView can be executed by Running it from the Program Manager or File Manager.

### Drag-and-Drop from File Manager

Drag-and-drop a file on a running PolyView application, or on a minimized PolyView icon, to send the file or files to PolyView. Depending upon the [Drag and Drop File Actions](#) property of the File Properties Tab of the Properties dialog selected from the Properties dialog, Polyview will

Create a new window for each dragged file

Create a new slide show from the dragged files

Add the new files to an existing slide show

See the information about [Full Screen Display Modes](#) for an explanation of slide show mode characteristics.

**Caution:** If PolyView is configured to create a new window for each dragged file and a large number of files are "dropped", then PolyView can fairly quickly use up large amounts of the real and virtual memory resources in your system. If this occurs accidentally, the multithreaded nature of PolyView will allow you to correct your mistake by choosing the File:Exit command to terminate file decompression and release all resources.

## Windows Registry Usage

PolyView uses the Windows registry for the storage of all information pertaining to individual user settings from the Properties menu, most recently used file list, and the most recently used directory. The polyview.ini file in the windows directory (WINNT35, WINDOWS, etc.) created by PolyView versions prior to 1.70 is no longer needed and may be discarded.

PolyView automatically registers itself with the File Manager or Windows 95 Explorer upon startup. This registration includes the specification of the relevant DDE information so that PolyView will be automatically started when a PolyView "document" is run. The association of a file type with PolyView is automatically done for supported image files, but only if an association for the particular file type did not previously exist. If you wish to replace an existing association, delete it from the registry (using REGEDIT or REGEDIT32) and rerun PolyView.

## The Toolbar

The PolyView toolbar contains buttons for:

Opening image files

Invoking full screen display mode

Manipulating the image appearance

Viewing the PolyView About dialog box

## Toolbar Positioning

The PolyView toolbar is a docking toolbar. This means that it can be grabbed with the left mouse button and dragged to a new position within the PolyView window. If positioned against an edge of the window it will be docked there. The toolbar can also be left floating anywhere in the window, or made invisible through the View:Toolbar command.

## Full Screen Display Modes

The [File:Slideshow](#), [View:Full Screen View](#), and [View:Auto-browse Images](#) commands display the current image using the entire display screen. Images displayed in full screen mode will be downscaled to fit the screen if the raw image size exceeds the screen pixel dimensions.

### Automatic Image Cycling

In slide show or auto-browse modes, images will be changed at the rate indicated by the [Browsed Image Display Time](#) property of the [Browsing Properties Tab](#) of the [Properties](#) dialog.

### Manual Image Cycling

While browsing images in full screen mode, the left and right mouse buttons can be used to manually cycle through the selected images, cancelling any timed image cycling that is in progress. The left mouse button causes the display of the previously displayed image, and the right mouse button causes the display of the next image.

**Note 1:** When a slide show is manually browsed there will be periods of time after a new image is displayed when the next image will not be available for display. During this period while the next image is decompressed the system displays an hourglass cursor. PolyView attempts to load the next image to be displayed by assuming that it is the next file in the slide show list in the direction that was directed by the last mouse click. When a manual slide show is initially started, PolyView displays the first image and begins reading the next image to the right (the second image in the list of slide show files). At this time the last file in the slide show file list is not loaded, so a left mouse button click after the hourglass cursor disappears will start it loading. When the hourglass again disappears a left button click will move to that image.

**Note 2:** Under Windows 95 a right mouse button click near the top of the screen will invoke the standard Windows 95 popup menu, interfering with the full screen mechanisms used by PolyView. At the time of this writing there is no workaround for this problem except to avoid this area of the screen with the mouse cursor while using the right button to cycle images.

### Cancelling Full Screen Mode

Full screen mode is cancelled by entering a key from the keyboard.

## Panning and Zooming Images

### Panning

Images that do not fit within a displayed window can be panned (positioned) by using the scroll-bars that appear on the window.

**Note:** Panning smoothness is severely constrained by the selection of the [Half Tone](#) display mode via the [Display Rendering Mode](#) property of the [General Properties Tab](#) of the [Properties](#) dialog.

### Zooming the Image

PolyView can change the magnification of a displayed image in several ways.

The [View:Zoom In](#) command increases the magnification of a displayed image by about 50%. The original window size is maintained, with the center of the newly magnified image the same as that at the previous magnification.

The [View:Zoom Out](#) command changes the magnification and image display position to the conditions which existed prior to the previous [View:Zoom In](#) command.

A more interactive zoom is available by using the left mouse button to draw a rectangle around the area to be displayed in the magnified image. When the button is released the image will be rescaled. The [View:Zoom Out](#) command can be used to go back to the previous magnification.



## Image Appearance Manipulation

The appearance of an image can be manipulated when the display mode is set to the [Half Tone](#) mode via the [Display Rendering Mode](#) property of the [General Properties Tab](#) of the [Properties](#) dialog. Although [Half Tone](#) mode has a much slower display update than other modes, it does allow the manipulation of brightness, contrast, color intensity, and tint.

The default display mode used for viewing an image is either the mode set the last time the mode was changed from the Properties dialog, or the mode last used for that image when the use of [image configuration files](#) has been enabled.

**Important:** Some, if not all, Windows NT display drivers do not function as indicated by the Win32 API when the screen is configured for 24 bit color (True Color) resolution. The symptom you will observe is that, although the color manipulation commands are enabled, they will appear to be non-functional. This is also true when PolyView is run under Windows 95.

## Image Configuration Files

If the use of an image specific configuration file is enabled through the File Properties Tab of the Properties dialog, then the manipulation of the display mode and color/contrast settings for that image will result in the creation of a configuration file for the image. The name of the file is derived from the name of the image file by replacing the original file extension with the extension ".PVI". The storage location for the image configuration file is in the same directory where the original image file is located. When this option is enabled, each time an image is displayed it will use the settings from the last time it was displayed.

**Note:** Image configuration files will not be created if the destination path is a read-only directory.

## Properties

The PolyView Properties dialog box, accessed through the Properties selection of the Options menu, is used to control the user preferences for the operations performed by PolyView during its operations. The various properties are organized under the tabs of the dialog box. These tabs include:

### Properties Dialog Tabs:

File Properties Tab

General Properties Tab

Browsing Properties Tab

JPEG Properties Tab

## File Properties Tab

The file properties are available from the [Files](#) tab of the [Properties](#) dialog. These include:

### Drag and Drop File Actions

Options to control whether files dragged from the File Manager and dropped on PolyView create new image windows, or are used to create or augment a slide show. Two options are presented:

[Create a window for each file](#)

[Create a slide show from files](#)

[Add to existing list](#)

### Image File Open Actions

Options to control whether a file opened by PolyView creates a new image window or replaces the current image window. Two options are presented:

[Create New Window](#)

[Replace Current Window](#)

### Use Image Configuration Files

This option controls whether PolyView reads and writes [configuration files](#) for images.

If this option is chosen, then each file dragged and dropped on PolyView will create a separate image window. **Caution:** if a large number of files are dropped, then correspondingly large quantities of memory resources will be consumed.

If this option is chosen, then a group of files dragged and dropped on PolyView will be used as the file list for a slide show and the slide show will be automatically entered.

If this option is chosen, then each file opened by PolyView will be displayed in a separate, newly created window.

If this option is chosen, then each file opened by PolyView will be displayed in the current window, replacing any existing image. If no images are currently being displayed then PolyView will create a new window for the image. **Note:** If multiple files are dropped on PolyView when this option has been selected, then only the first file will be opened.



If [Create a slide show from files](#) has been selected, then this option controls whether the dropped group of files replaces an existing slide show list or is added to it. **Note:** this option will be disabled unless [Create a slide show from files](#) has been selected.

## General Properties Tab

The general properties are available from the [General](#) tab of the [Properties](#) dialog. These include:

### Display Rendering Mode

The mechanism to control the way PolyView paints images to the screen. This becomes particularly important when large images are shrunk down to fit in a smaller screen area where the choice of the correct rendering mode can have a significant affect on the appearance of the reduced image. The available modes are:

[Black on White](#)

[Color on Color](#)

[Half Tone](#)

[White on Black](#)

### Default One-For-One Mapping

This option controls the way PolyView deals with images that are larger than the maximum size image that can be displayed in the current viewing area. If [Default One-For-One Mapping](#) is selected, then PolyView will prepare the largest size window possible and equip it with scroll-bars to enable panning around in the image. If [Default One-For-One Mapping](#) is not selected, then PolyView will scale the image to fit within the viewing space. In this case the [View:One-for-One Mapping](#) command can be used to achieve the same view of the image.

### Photo-CD Upsizing

The [Photo-CD Upsizing](#) options control the way PolyView selects the image size to use from a Photo-CD image file.

The Black on White rendering mode preserves black pixels at the expense of white pixels in monochrome images. The mechanism used is to perform a boolean AND operation between the pixels in the group being reduced to a single pixel. The result is that if any one pixel in the group is black, then the resulting pixel will be black.

The White on Black rendering mode preserves white pixels at the expense of black pixels in monochrome images. The mechanism used is to perform a boolean OR operation between the pixels in the group being reduced to a single pixel. The result is that if any one pixel in the group is white, then the resulting pixel will be white.

The Color on Color rendering mode preserves color in color images. The mechanism used is to simply choose one pixel in the group being reduced to a single pixel.

The Half Tone rendering mode is the most accurate (and slowest) way to reduce the resolution of color images. In this mode the average color of the pixels in the group being reduced to a single pixel is computed and becomes the color of the resulting pixel. **Note 1:** Because of the increased processing that occurs with Half Tone rendering mode, panning smoothness is severely constrained when this mode is chosen. **Note 2:** Half Tone mode must be selected to activate the color adjustment features of PolyView.

## Photo-CD Upsizing

The algorithm that PolyView uses to select the display image size of a photo-cd file depends on the [Enable Photo-CD Upsizing](#) option of the [General Properties Tab](#) of the [Properties](#) dialog.

If upsizing is not enabled, then PolyView chooses an image size which fits within the dimensions of the full screen viewing area, yielding the most accurate display of the image. For example, if a horizontal image is to be displayed on an 800x600 resolution display, then the 768x512 image size will be chosen. On the same display, however, a vertical image will be displayed in a 256x384 format, since the next available size of 512x768 will overfill the screen in the vertical direction.

If upsizing is enabled, then PolyView chooses an image which fills the screen to the [Screen Fill Percentage](#) in at least one direction. For example, consider the case where a 75% [Screen Fill Percentage](#) has been chosen. On an 800x600 display, a horizontal image will be displayed in the 768x512 image size because this fills the screen to 96% in the horizontal direction, and 85% in the vertical direction. For a vertical image a 512x768 image will be chosen, because the next smaller size of 256x384 will fill the screen to only 32% in the horizontal direction, and 64% in the vertical direction. In this case, the 512x768 image will be "shrunk" to exactly fill the available display area.

**Caution:** upsizing can cause PolyView to use a significantly larger amount of memory during photo-cd image decompression and display. Specifying a 90% [Screen Fill Percentage](#) on an 800x600 display will result in PolyView choosing a 1536x1024 image. During decompression this size image requires a 4.6 Mbyte memory structure to be allocated for the storage of a device independent bitmap. On a 24 bit display the resulting device dependent bitmap is also 4.6 Mbytes in size, so the peak memory requirement to display this image is more than 9.2 Mbytes. This will lead to significant disk accesses and performance degradation on memory challenged systems.

## **Browsing Properties Tab**

The browsing properties are available from the Browsing tab of the Properties dialog. These properties include:

### **Browsed Image Display Time**

The number of seconds an image is to be displayed in auto-browse or slide show modes. This is the minimum time for the display of the image in slide show mode. The next image load is started when an image is displayed, so long image load times may increase the image display time.

### **Timed Browsing Mode**

These properties control the method used to terminate auto-browse or slide show mode. Three alternatives are provided:

Cycle Images Once

Cycle Images Continuously

Cycle Images Manually



The images are cycled once from the beginning to the end of the list. When the end of the image list is reached the full screen mode will be terminated.

The images are cycled continuously. When the end of the image list is reached the list is restarted from the beginning. User intervention via the mouse or the keyboard is required to interrupt the display cycling.

Image cycling is controlled by the user via the mouse or the keyboard. The right mouse button advances to the next image in the list. The left mouse button advances to the previous image in the list.

## JPEG Properties Tab

The JPEG properties are available from the [JPEG](#) tab of the [Properties](#) dialog.

### DCT Arithmetic Method

The PolyView JPEG algorithms provide several methods for performing the Discrete Cosine Transform (DCT) used during JPEG format file decompression. The methods available are:

[Accurate Integers](#)

[Fast Integers](#)

[More Accurate Floating Point](#)

### Chroma Component Upsampling Method

The Chroma component upsampling method controls the speed and accuracy of certain color manipulations performed during JPEG image decompression. The methods available are:

[Slow, careful, and accurate](#)

[Fast, but less accurate](#)

### Quantized Color Options

When the Windows display driver is set to 8 bit color mode (256 colors), then color quantization is performed during decompression. The methods available for this quantization are:

[Two pass quantization](#)

[Color dithering](#)

Fast but inaccurate integers - this is the fastest method on most machines, but may suffer from degraded image quality. For many images there will be insignificant visible degradation.

Slow but accurate integers - this method is slower than the fast integer method, but achieves high quality results.

Fast or slow but accurate floating point - this highly accurate method may be the fastest on some machines, but on machines without floating point capability will be VERY slow.

Chroma (color) upsampling is performed very carefully and accurately. This is the slowest method.



Chroma (color) upsampling is performed with a sloppier method that leads to some image degradation. This method is much faster, however, and the degradation is frequently not detectable.

The entire image is scanned once to determine the optimum color map to use, then scanned again to build the final image. This is naturally slower than a single pass mode, but does a much better job of rendering colors.

Color dithering can improve the color characteristics of the decompressed image in both single and two pass modes, but the effects of dithering can be pronounced in single pass mode. Single pass mode with color dithering is faster than two pass mode quantization.

## Credits and Acknowledgments

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Tagged Image File Format support is based on the work of Sam Leffler. This work was made available according to the following statement:

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The Photo-CD decompression algorithm in PolyView was derived from the algorithm in the XLI application, an X Windows based image viewing utility. This work of many authors was made available according to the following statement:

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## **The PolyView Warranty**

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## Supported Formats

PolyView supports the following standard graphics formats for image viewing:

Bitmap (BMP)

Graphics Interchange Format (GIF)

Joint Photographics Experts Group (JPEG)

Photo-CD

Tagged Interchange File Format (TIFF)

TIFF files come in many shapes, sizes, and colors. Because of this it is virtually impossible to guarantee that all possible combinations of TIFF storage techniques will be interpreted and rendered correctly. PolyView **does**, however, support 1-4-8 bit grayscale images, 8 bit color mapped images, and 24 bit RGB images. These formats are supported with a variety of compression methods, planar configurations, and in both tiled and non-tiled forms.



Photo-CD is the Kodak Photo CD format. PolyView can extract any of the image sizes stored within these files.

JPEG format files containing 8 and 24 bit images are read and displayed by PolyView.

GIF file images are read and displayed by PolyView. PolyView ignores non-image related information found in GIF 89a files.

BMP format files with 8 and 24 bit color resolution are read and displayed by PolyView. The current version of PolyView does not process 1 and 4 bit color resolution bitmap files.

## File Menu

Contains the commands:

### Open...

Presents a standard file-open dialog box from which a graphics image file can be selected for display. Newly opened files will be created in a new window or in an existing window, depending on the settings of the [Image File Open Actions](#) property of the [File Properties Tab](#) of the [Properties](#) dialog.

### Slide Show...

Presents a modified file-open dialog box from which a list of images can be created for use in a full screen slide show presentation. The behavior in the [full screen display mode](#) is controlled by the settings of the [Browsing Properties Tab](#) of the [Properties](#) dialog.

### Close

Closes the currently displayed image.

### Delete

Deletes the file associated with the currently displayed image and closes the image window. A confirming dialog box will be presented to reduce the chances of accidentally deleting an image.

### Recently Opened File List

A list of the four most recently opened image files. Selecting one of these file names is equivalent to selecting it again through the Open... command.

### Exit

Closes all image windows and exits PolyView.

## View Menu

Contains the commands:

### Zoom In and Zoom Out

See [Panning and Zooming](#).

### Auto-browse Images

Presents a full screen slide show of the currently open images. The behavior in the [full screen display mode](#) is controlled by the settings of the [Browsing Properties Tab](#) of the [Properties dialog](#).

### Full Screen View

Displays the current image in [full screen mode](#).

### One-for-One Mapping

Changes the display of the current image to be actual size. The default PolyView behavior when opening large images is controlled by the [Default One-For-One Mapping](#) property of the [General Properties Tab](#) of the [Properties dialog](#).

### Resize to fit main window

Scales or rescales the current image to better fit the display area in the PolyView main window. A large image will be shrunk to fit the display, but small images will not be expanded.

### Toolbar

Enables or disables the display of the [toolbar](#).

### Status Bar

Enables or disables the display of the status bar.

## Options Menu

Contains the commands:

**Brighter+**

**Brighter-**

**Contrast+**

**Contrast-**

**Color+**

**Color-**

**Red+**

**Green+**

**Reset Brightness**

**Reset Contrast**

**Reset Color**

**Reset Red/Green Tint**

See [Image Appearance Manipulation](#).

**Properties...**

See [Properties](#).

## **Window Menu**

Contains the commands:

### **New Window**

Creates a new view of the current image. This might be useful for viewing separate portions of the same image at the same time.

### **Arrange Icons**

Arranges the current image icons in an orderly fashion within the PolyView main window.

### **Current Image List**

The list of image files currently open. Select an image from this list to make it the current image.



## **Help Menu**

Contains the commands:

### **Help Contents**

Displays the contents page of the PolyView help system.

### **Search For Help On**

Search the PolyView help system for information on a specific subject.

### **About PolyView**

Displays a dialog box with information about the current version of PolyView.

**Note:** Context sensitive help is also available by pressing the F1 key. Context sensitive help directs the user to the help topic appropriate to the action currently being performed.

## Past and Future

### The Past: PolyView Version History

- 1.00 Initial release.
- 1.10 Added default saving for application and image configuration defaults.  
Added View:Resize to fit command.
- 1.20 Added JPEG DCT method choice.  
Changed bitmap algorithms for better Win95 compatibility.
- 1.30 Added support for 8 bit color modes.
- 1.40 Added on-the-fly image painting during file reading.  
Remember last screen position and state.  
Remember last directory used to open a file.
- 1.50 Added full screen viewing mode.
- 1.60 Added slide show viewing mode.  
Added properties dialog and additional JPEG decompression options.
- 1.70 Added photo-cd file support.  
Added system registry use for file association.
- 1.80 Added photo-cd upsizing option.
- 1.90 Added TIFF file support.  
Added 24 bit BMP support in 256 color modes.  
Added File:Delete option.
- 1.91 Added context sensitive help.

### The Future

The following capabilities for PolyView are currently in the planning or implementation stages:

- Better support for image appearance manipulation.
- Support for displaying damaged image files.
- Support for displaying the comments found in GIF and JPG files.
- File saving to BMP, JPG, and TIFF formatted files.

