Black Ice Newsletter

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Simplify the Printer Driver's user interface. Part II.

Continued from October's issue

III. Internationalization

Developers can customize the Resource DLL in order to internationalize the printer driver's user interface, and to add support for foreign languages. All of the string on the user interface can be edited; also all of the strings used and displayed by the printer driver are stored in the string table in the Resource DLL. For example, if a developer would like to ship the printer driver to the German market, then they can translate the strings from the string table, change the labels on the dialog box to German text, and can resize and move the controls on the user interface in order to fit the German text. In order to change the name of the papers, developers can edit the printer driver's INI file.

IV. Add/remove paper formats

Each paper size used by the printer driver can be edited, removed or new paper sizes can be created. To add or modify existing paper sizes developers or end users can use the "Edit paper list" option on the General Settings tab of the printer driver's user interface. Using the paper list manager it is easy to add

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Color space support, image manipulation and dithering methods in the Document Imaging SDK

Every image processing toolkit must provide tools to convert images from one format to another, and these image conversions can be grouped into multiple categories. These categories are: file format conversions, which change the way that image data is encoded and saved into a file; and color space conversions, which change the way that colors are represented. In addition to these conversion methods, image-processing toolkits must provide tools that change different attributes of a given image.

All the above functionality is included in the Black Ice Document Imaging SDK and the Image SDK. The following article will focus specifically on color space support, color manipulation and dithering functionality.

Color space support: Today's devices represent colors in many different ways. Some devices, like display devices, work with the RGB color space. Other devices such as printers may use the CMYK colors space. The Document Imaging SDK/ ActiveX has over 60 functions, which can be grouped into three sets of functions. There is a group of function to convert a Device Independent Bitmap, a buffer or a single pixel to and from any of the supported color spaces. Black Ice Document Imaging SDK and Image SDK currently support the fol-

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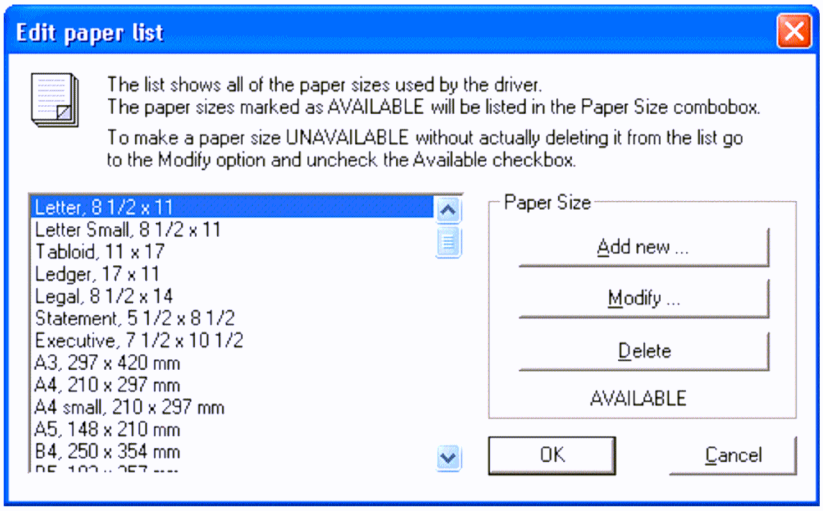
new papers, modify existing ones or delete (or just hide) unnecessary paper sizes.
All paper sizes are stored in the printer drivers INI file. After modifying the list of papers, developers can hide the "Edit paper list" button from the user interface. This way the end users are limited to use the papers that the developer made available for them.



Picture 1:

V. Hide unused file formats

Usual applications that integrate the printer driver are typically using only a few file formats. Faxing application most likely will use only the TIFF Group3 1D file format. If the end user changes the printing output to color JPEG, that may cause problems in the application which integrates the printer driver. The best solution is to restrict the end users to only use the file formats supported by the developer's application.
File formats can be disabled using the INI file. At the UI File formats section, enter a 0 for each file format name you would like to hide. This way the disabled file formats will not show up for the end user in the File Format selection list.

```
[UI FileFormats]
Microsoft DIB format=0
TIFF Group4=0
```

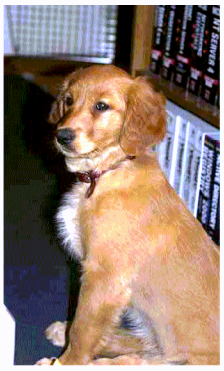
Advanced printing features only in the Document Imaging SDK

The main features of the advanced printing component of the Document Imaging SDK are the composing module for photo printing, complete integration with the Black Ice printer driver's technology, and a full set of ActiveX controls for VB and .NET. Several high level functions are available to compose a page for photo printing with visual controls. The photo composer module allows developers to create the layout of the final printed page by programmatically specifying the position and size of an image on the paper in inches, millimeters or even pixels. Pictures can also be positioned by manually dragging the photos on the page or by aligning the photos on the page to the center, to the left, or to the right. In addition, cropping and scaling is built into the photo composer module with a convenient drag and drop interface for photo importing. Usually only C or C++ developers can take full advantage of printing devices, but now the Document Imaging SDK includes unique printing capabilities for .NET and VB developers, which are not available in any other Imaging SDK's. Some of the key features of the advanced printing are the options for developers to access and modify the printer's "DEVMODE", from all of the main programming languages. The advanced print module is completely integrated with the Document Imaging SDK. The Black Ice Advanced Printer Driver technology includes over 300 functions to control every aspect of the printer driver configuration and printing process. Now, Visual Basic and .NET developers can retrieve and set individual printer settings such as orientation, resolution, and page size. The advanced printing features of the Document Imaging SDK can be used together with the Black Ice printer drivers and this way application developers gain access to high-end document conversion features. By combining the document conversion features of the Black Ice printer drivers with the document and image manipulation features of the Document Imaging SDK, developers can create robust systems that can address any document imaging task.

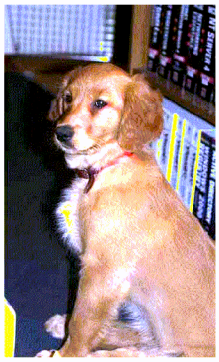
All of the advanced printing features are also available for VB.NET, C#, VB, Delphi, etc. developers through the Active X controls which ship with the Document Imaging SDK. The Active X control contains all of the same powerful features as the C or C++ interface.

(New exciting additions - Continued from page 1)
lowing 9 color spaces: RGB, CMY, CMYK, HIS, HSV, L*a*b, XYZ, YIQ, YUV.

Color manipulation and dithering: Color manipulation methods change the appearance of an image by changing basic characteristics of the image such as contrast, brightness, hue, saturation, etc. Dithering methods modify the number of bits that stores the color of a pixel. The most common way to represent the color of a pixel is by using 24 bits (3 bytes) of information. The first byte (8 bits) stores the red component, the second stores the green component and the third byte stores the blue component. This method produces very good results but 24 bit images are very large. Other images store the color of each pixel in less the 3 bytes. As the number of bytes per pixel is reduces the image size will be smaller but the color reproduction will also be reduced. If the number of bits that represent a pixel goes down to one, then every pixel of the image can be either white or black. These images are monochrome images and are widely used in faxing.
Two colors are sufficient for most office documents when the image contains text only. There is a bigger problem when documents contain charts, drawings, photos etc. Because there are more colors in the document than a monochrome image could represent there was a need to find a solution to represent many shades of colors by a combination of black and white pixels only. These methods are named dithering methods and they represent colors by changing the density of black pixels in a given area.
The Black Ice Document Imaging SDK and Image SDK provide numerous color manipulation and dithering functions. In addition to basic brightness, contrast, hue and saturation manipulation functions, the Document Imaging SDK also includes more sophisticated features like automatic contrast, level and color adjustment function which analyze the image and set the contrast and other parameters of the image automatically.
In addition to the color manipulation functions the Black Ice Document Imaging SDK and Image SDK includes 9 dithering methods. Some of these methods are only available from Black Ice Software. These methods are the following: Floyd-Steinberg, Jarvis-Judice-Ninke, Sharp, Smooth, Stucki, Burkes, Sierra, Stevenson Arce and Ordered dithering. These methods produce fast and spectacular results. The following image shows the original image and the result of the Stevenson Arce dithering.



Original picture



Picture after using the Stevenson Arce dithering

Printing from C code

The first step is to retrieve the printer's devmode. Pass the handle retrieved by the OpenPrinter() function to the GetPrinter() function with the PRINTER_INFO_2 type structure. Printing a document to a printer is very similar to displaying the document on the computer screen. The developer has to draw the contents of the document to the printer's Device Context as he would draw them in a window DC. In order to create a Device Context for a particular printer, use the CreateDC() API function. hDCPrinter = CreateDC("WINSPOOL", szPrinterName, NULL, pi2->pDevMode); To start the printing process call the StartDoc () function. Pass the handle to the DC returned by the CreateDC function, and pass the pointer to the DOCINFO type variable. Specify the name of the document you would like to use in the lpszDocName member of the DOCINFO structure. Applications should call the StartDoc function immediately before beginning a print job. This function ensures that pages from multipage documents will not be mixed with other print jobs. The value returned by StartDoc can be used to retrieve or set the priority of a print job. The developer can call the GetJob or SetJob functions and pass the value returned by the StartDoc function. Use the StartPage() function to start new page. The StartPage function prepares the printer driver to accept data. Printing (drawing) a page ends when the EndPage() function is called. The actual drawing of the document must happen between the StartPage and EndPage function calls. The EndPage function notifies the printer driver that the application has finished writing to a page. This function is typically used to direct the device driver to advance to a new page. Use the EndDoc function to end the print job. The EndDoc will notify the printer driver that the job is ended and no more pages are printed.

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Inside

Advanced printing features in the Document Imaging SDK!

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Time to upgrade? Latest Version Numbers

Programming Tools

Product	Version	Date
Fax C++/ActiveX/COM	9.18	08/20/03
Voice C++/ActiveX/COM	9.18	08/20/03
ColorPrinter Driver for Win95/98/ME	5.57	07/28/03
Metafile Printer Driver for Win95/98/ME	5.57	07/28/03
Mono Printer Driver for Win95/98/ME	5.57	07/28/03
PDF Printer Driver for Win95/98/ME	5.57	07/28/03
Mono Printer Driver for NT/Win2000/XP	8.12	08/31/03
Color Printer Driver for NT/Win2000/XP	8.12	08/31/03
Mono Printer Driver for NT/W2K/XP	8.12	08/31/03
Metafile Printer Driver for NT/W2K/XP	8.12	08/31/03
PDF Printer Driver for NT/W2K/XP	8.12	08/31/03
Terminal Server Printer Driver Win2003	8.12	08/31/03
Tiff SDK/ActiveX/COM	10.0	09/20/03
Annotation SDK/ActiveX/COM	10.0	09/30/03
Cover Page Generator for Imaging SDKs	10.0	09/20/03
PDF Plug-in for TIFF SDK	10.0	09/30/03
Image SDK/OCX	10.0	09/20/03
Document Imaging SDK	10.0	08/03/03

Impact Products

Product	Version	Date
Impact Fax Server	4.36	12/18/02
Impact Voice Mail Server (Standard)	3.14	04/11/01
Impact Voice Mail Server (Deluxe)	3.79	04/11/01
Impact Terminal Fax Server	4.34	05/03/02
Impact Fax on Demand	4.06	12/01/00
Impact Fax Broadcast	3.04	08/01/03
Impact ColorFax	5.01	02/21/03
Drag and Drop Printing	2.00	12/24/02

Internet Tools

Print2Email	3.01	01/20/03
Tiff Viewer Plug-in - Complete	5.01	06/26/03
Print Monitoring Server	2.20	09/05/03

Free Software

ColorFax LITE	5.01	02/21/03
Tiff Viewer Plug-in - Free Version	5.00	03/26/03
ModemWeasel	2.00	08/01/02