Overview

Grayscale Printing Concepts

With grayscale printing you can reproduce color images as high-quality black and white images by using many shades of gray to represent subtle variations in color and light. Printing solutions that produce high-quality grayscale output use color printing concepts with a black and white printer that supports them to achieve that effect.

Moving to grayscale printing might be a first step in a migration to full color printing. You can start to create color print jobs and print them on an existing printer until you are ready to invest in color printers. In addition, you can use a grayscale printer as a backup system for a full color printer.

Some color concepts are much less important in grayscale printing than they are in color printing:

- The gamut of a black and white printer is much smaller than that of a color printer; essentially all the colors in an image must be adjusted.
- The rendering intent you choose has little effect on the appearance of the image because the colors are already being changed significantly.
- Page registration is less important. Because the printer only uses one color, you do not have to line up the color planes to create the correct color.
- Paper characteristics have minimal effect on grayscale output; one output profile is usually adequate for all types of paper.

Other color concepts are more essential to grayscale printing.

Color spaces and ICC profiles

The color space of a black and white printer is much smaller than that of a color printer. Even so, printers that can print grayscale images have output ICC profiles, just like color printers. The ICC profiles for black and white printers map colors from the profile connection space (PCS) to shades of gray. Otherwise, the color conversion process is the same.

The print job should specify the appropriate input profile; if there is no input ICC profile, the printer uses a reasonable default. The printer has its own default ICC profile installed and available; it should be adequate for nearly all print jobs.

Halftones

Grayscale printers apply halftones to print jobs to print them; halftones let the printer produce many shades of gray and high-quality images. Generally, the most important characteristic to consider for halftones in grayscale printing is line screen frequency, expressed in lines per inch (lpi). Each printer supports a set of line screen frequencies natively; when you specify the desired line screen frequency in a print job, the printer chooses the available line screen frequency that best matches it.

Tone transfer curves

Tone transfer curves are used in grayscale printing to adjust the amount of toner that is used at different levels of gray, thus adjusting the appearance of images. You can use the appearance value of a tone transfer curve in grayscale printing to indicate how much the tone transfer curve should adjust the color values. Some sample appearance values could be:

- Dark
- Highlight Midtone
- Standard

Parent topic: Color and Grayscale Printing