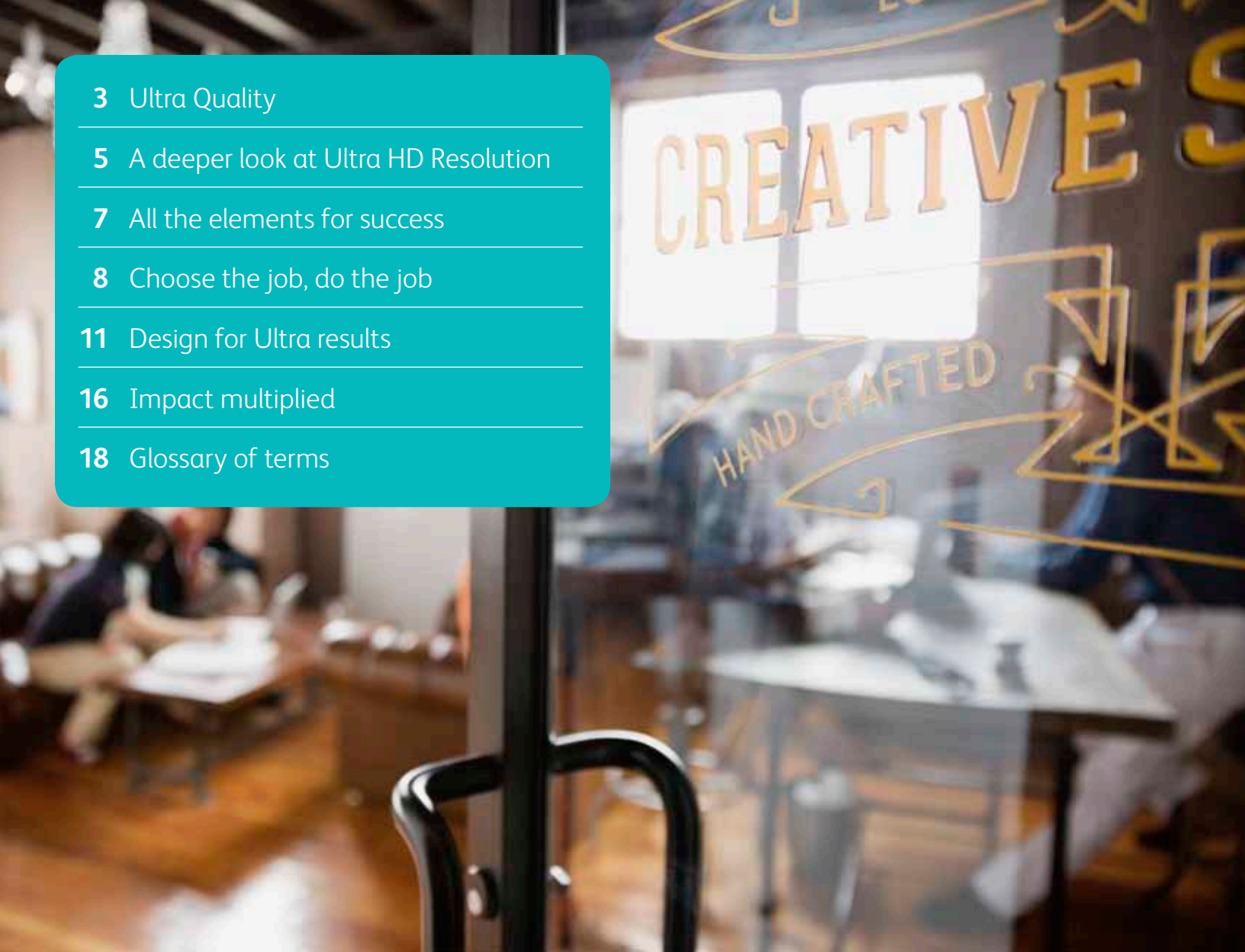
A Designer's Guide to Ultra HD Resolution



Ultra quality

From its early days, you likely had to design around digital printing—because of some of the special considerations—and concessions—that it required. With the Xerox® Versant® 2100 Press, the rules have changed. The press is designed to give you incredible power and flexibility so you can put those old concessions aside, knowing that your intentions will be delivered in print after stunning print.

Gradients, thin fonts, fine-line graphics and incredible photographic detail can all be rendered with never-before-seen-in-digital smoothness and accuracy. That's the exclusive Ultra HD Resolution at work. And, it's available for you each and every time you specify Xerox® Versant 2100 Press prints.

Simply ask for a press enabled with Ultra HD Resolution—and get ready to be seriously impressed.

Ask for Ultra HD Resolution from Xerox®

Previously, a digital print shop may have had to make tradeoffs when it came to optimizing elements of your jobs—should the fonts look crisper? Or should they make sure the images pop? Now, by selecting an Ultra HD Resolution press from Xerox®, you can get both—and print without compromise.

It's now easier than ever to get more quality

The unique Ultra HD Resolution is a precise combination of increased RIP resolution, a proprietary imaging path and VCSEL ROS—that's the laser that writes your images during the Xerographic printing process—and the EA Eco Dry Ink used to print your images to paper.

You may be wondering how any of that is different from current digital printing methods. After all, digital printing is digital printing, right? Not anymore.

You likely already trust Xerox® digital presses to deliver vibrant image resolution at 2400 x 2400 dpi—that's thanks to our VCSEL ROS technology.

Now, the Versant 2100's Ultra HD Resolution combines that incredible imaging capability at the press with increased RIP resolution at the Digital Front End, sending your data at up to 1200 x 1200 dpi vs. the standard 600 x 600 dpi used in most digital printing processes.

By sending more data to the press, the fine details in the graphic fills, gradients, line art and text that you build into your designs every day are preserved with amazing accuracy.

What you want is what you get

Ultra HD Resolution is quality you can count on in everything you design:

Higher quality text and graphic lines

Smoother gradients and sweeps

Consistently outstanding images

A deeper look at Ultra HD Resolution

Ultra HD Resolution maintains the highest quality throughout the whole imaging process. By asking for an Ultra HD Resolution press from Xerox®, you will help guarantee that your jobs print with the stunning detail you envision.

If you find yourself designing with large gradients, be sure to also ask for Ultra Smooth Gradients when you specify your work—that will ensure that your jobs are run using the 1200 x 1200 RIP resolution you now know is such a critical part of Ultra HD, plus 10-bit color depth. This extra level of bit depth is what helps create the stunningly smooth gradients you see on this page.

A little "bit" closer look at bit depth

Bits are the number of binary digits that make up an image. It's easier to understand the real value of the Ultra Smooth Gradient option by doing a bit of simple math…

Do the math with 8-bits:

- The highest value 8-bits can contain in binary is 1111 1111 (or 8 x 1).
- Each binary digit can be 0 or 1.
- Extended into decimal values, that means 128+64+32+16+8+4+2+1 = 255.
- Add 0 and the final value is 256 or 2^8.

Now the meaning of 256 and 1,024:

- 8-bit gives 256 addressable shades in a gradient per C, M, Y and K.
- 10-bit gives 1,024 addressable shades in a gradient per C, M, Y and K.

Do the same math with 10-bits:

- 512+256+128+64+32+16+8+4+2+1 = 1,023.
- Add 0 and the final value is 1,024 or 2^{10}.

So what does this mean in the context of prints?

- The difference between 8-bit and 10-bit manifests in vector gradients.
- When you draw a vector gradient, the number of steps will ALWAYS be based on the bit depth.
- Stepping becomes increasingly obvious when using smaller bit depths over larger areas.

The bottom line—more bits mean more smoothness for your gradients.

There are other technologies within the Xerox® Versant 2100 Press that complement Ultra HD Resolution and help ensure remarkably clean lines, crisp edges, and amazingly tack sharp vector art and fonts.

One is GrayFont Technology, which EFI front ends use to provide optimized edge thickness and definition for text and graphics.

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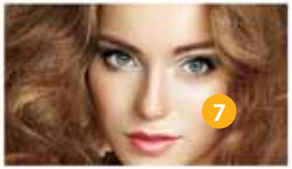

Signs

8

Detail Detail Detail Detail Detail
Detail Detail Detail Detail Detail

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All the elements for success

Ultra HD Resolution improves the rendering of a number of standard design elements, putting more power in your hands. Essentially, if you can create it, the Xerox® Versant 2100 Press can print it with more quality than other digital printers in its class. There's no longer a reason to avoid the elements that used to be a problem for digital print—gradients, thin fonts and vector graphics.

1

Highlights

Bright highlights and smooth blends between colors create subtle, nuanced transitions.

2

Tints

Ultra smooth tints preserve accuracy.

3

Ultra smooth gradients

Large gradients are printed consistently, without visible stepping.

4

Line screen and object oriented halftoning

A choice of line screen and the size of the halftone cell enable incredibly fine detail, even to the point of rendering images and text on the same page at different line screens for optimal results.

5

Shadows

Detailed shadows add realistic depth.

6

Bitmapped images

Remarkably sharp images and realistic soft shadows.

7

Flesh tone

Natural flesh tones and pure neutrals reproduce images with lifelike definition.

8

Vector images

Smooth, sharp and crisp regardless of how large you decide to print.

9

Fonts

Sharp, crisp text prints down to the smallest detail.

Reduce costs even as you hit your deadlines

Selecting the right media not only makes your job look great, it helps ensure the productivity of the Xerox® Versant 2100 Press so you get your job on time. Your print provider can help guide you on all the options, but one thing is guaranteed—you can trust Xerox® Media.

Printing on Xerox® Media opens the door to the widest set of high-value applications from photo-quality jobs, such as booklets and brochures, to greeting cards and calendars, to nearly indestructible jobs such as ID cards, menus and more.

In addition to Xerox® Media, Ultra HD Resolution presses run other digitally optimized stocks from vendors such as Neenah, McCoy and Mohawk.

Choose the job, do the job

Ultra HD Resolution is an important part of the Versant 2100 Press's imaging story—but it's not the only part. Selecting the right media will help make a critical impact on the final printed result. The Versant 2100 provides best-in-class image quality on a range of stocks, so you can continue to expand your view of digital print's capabilities.

A range of weights

The Versant 2100's paper path has been optimized for a wide range of paper weights, from lightweight (52 gsm) stocks that help maximize your postal savings, to heavyweight media that will make a solid impression.

A range of finishes

Printing with the Versant 2100 means you can say goodbye to using only plain white stock for digital jobs. Textured stocks such as laid and linen can add value to your invitations and business cards. And, the Versant 2100's imaging process ensures your images are applied to these textured stocks beautifully.

A range of specialty media

The Versant 2100 is also well-versed in running specialty stocks such as synthetics and polyesters, so you can create nearly indestructible jobs such as menus and point of sale signage. Unique, specialty packaging applications are also within reach—in fact, the Versant 2100 Press will help you deliver short runs of the most innovative digital jobs on the market, all in just-in-time timeframes.

The ability to print with Ultra HD Resolution on a wide variety of media means one thing—you can confidently produce a greater variety of jobs that look better than ever and achieve more of what your customers are looking for.

Different types of jobs benefit from Ultra HD Resolution in different ways:

Photo-based applications

Ultra HD Resolution makes a visibly dramatic improvement in a number of areas common in photo-based applications.

Skin tones are more nuanced and true-to-life thanks to pure neutrals and lifelike definition. And, the blue skies that are common in so many photographs now exhibit much greater smoothness; the mottling that you may have had to go to great lengths to avoid in earlier generations of digital printing is noticeably absent.

Collateral

Branded color is critical in corporate collateral. And, given the changing nature of business and shortened product cycles, there is tremendous importance on the ability to print consistent, accurate, repeatable color. The Versant 2100 easily produces consistent color from day to day and from press to press.

Direct mail

Direct mail is a mix of photos and text. In the past, printing solutions often did one or the other well. Ultra HD Resolution removes the tradeoffs and ensures all the graphic elements in your direct mail arrive looking great.

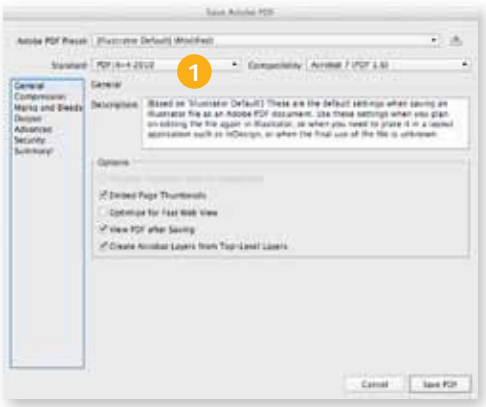
Design for Ultra results

Here's the contradiction about designing for Ultra HD Resolution: you don't have to design any differently. For designers who lived through the evolution of digital printing technology, that is a remarkable statement. Ultra HD Resolution allows you to take full advantage of more design possibilities, starting right now.

Here are some tips and considerations for your file preparation processes that will help you achieve the best quality.

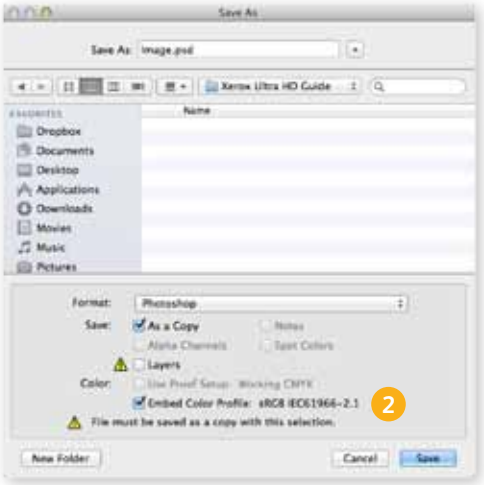
Source images from Adobe® Photoshop® and Adobe® Illustrator®

- Native file formats such as Photoshop PSD or Illustrator AI files are preferred for using in a layout program such as Adobe® InDesign®.
- To keep images tack sharp, they should be 300 dpi at 100% before they go into InDesign (higher is acceptable).
- If you have a very large image and need to reduce the file size, either scale the image appropriately and save a new copy or let the Export to PDF function reduce the file size.



1 If you are looking to print a Photoshop or Illustrator file directly, choose the Save As PDF option and select PDF/X-4.

Design for Ultra results



Color management 101

If you are making decisions about and correcting color, be sure you have calibrated and profiled your monitor. Ensure that the Color Management settings for the Adobe® Creative Suite® are synchronized.

1. To do this, launch Adobe® Bridge, go to Edit Creative Suite Color Settings, select the recommended default North America General Purpose 2, and then click Apply.

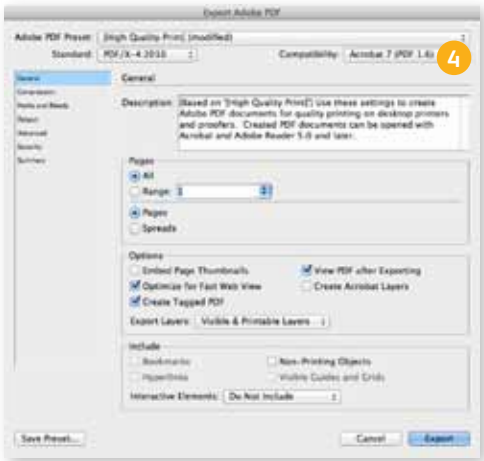
2. In Adobe® Photoshop®, select Save As in order to maintain the original, and check Embed Color Profile to include the ICC profile for the image.

Use the Acrobat® preflight tool for a quick check that the ICC profiles are tagged to objects in the PDF.

It is recommended to honor image's source color space as is and saving the color conversion as late in the process as possible. So if the file was provided as RGB, keep it as RGB. Consult your print provider for any additional color management setting requirements.

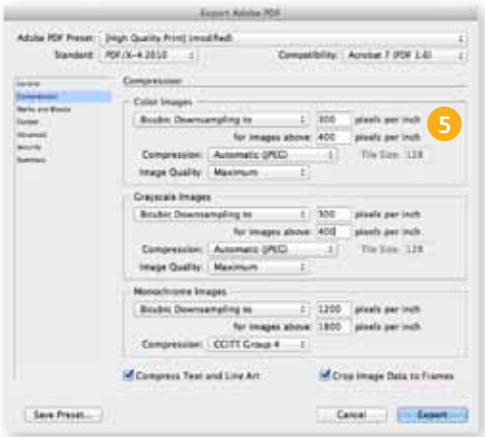
3 For the best possible match make sure you create Pantone® colors as spot colors.

If you are using Pantone colors, do not rename or convert them to CMYK. This is true for Adobe® InDesign®, Photoshop® and Illustrator®. Renaming may cause a CMYK alternate conversion at the RIP.



File preparation

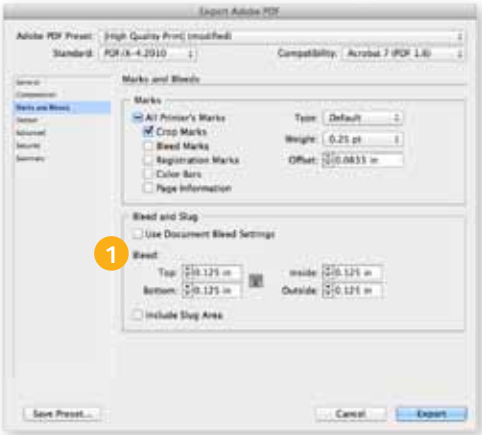
- In order to get the full value of Ultra HD Resolution, keep all fonts live or if the design absolutely requires it convert large fonts to outlines. Do not rasterize fonts if at all possible.
- For final image conversion/compression, JPG 2000 or JPG at high quality yield the best results.
- PDF is the preferred output. When creating a PDF, use High Quality Compression for image normalization and the following recommended settings. Please note that the displayed screens are Adobe® Creative Suite® 5.

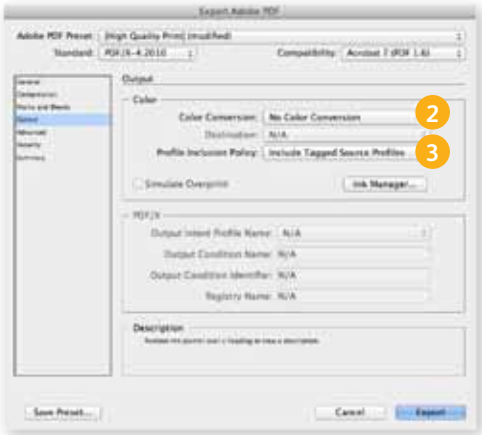


4 Acrobat 7 compatibility honors layers and ensures transparent objects are live and print as intended.

5 Set Bicubic Downsampling to 300 dpi for images above 400 dpi.

Design for Ultra results





1. If designing with bleeds, enable Crop Marks and set Bleed to 0.125"; otherwise, no marks or page information is required.

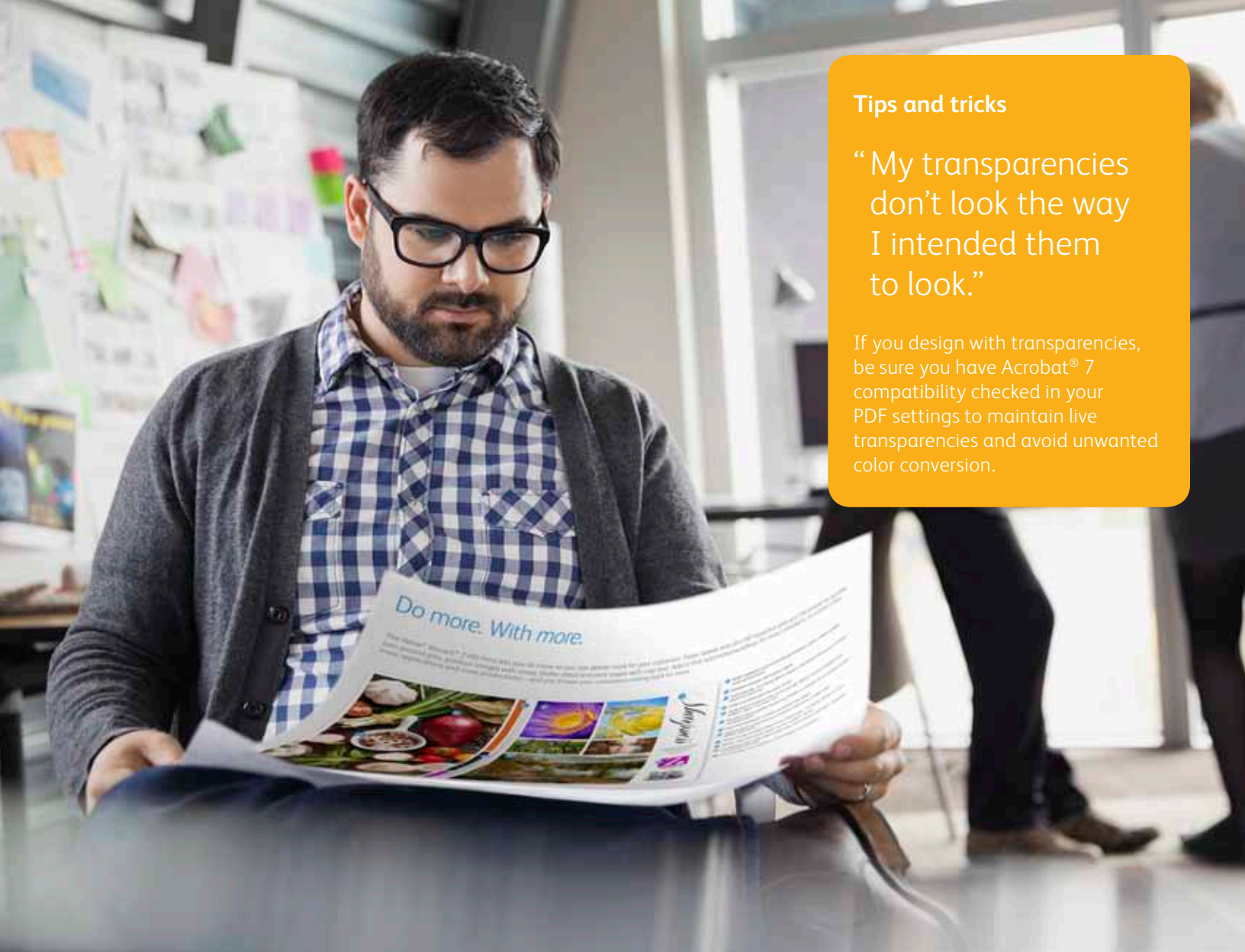
2. Set Color Conversion to No Color Conversion.

3. Set Profile Inclusion Policy to Include Tagged Source Profiles.

Set Transparency Flattener to High.

The Versant 2100 uses the latest Adobe® PDF Print Engine technology, which ensures that transparent objects and effects are handled seamlessly and never have to be flattened or altered.

Consult your print provider for any additional PDF output setting requirements.



Tips and tricks

"My transparencies don't look the way I intended them to look."

If you design with transparencies, be sure you have Acrobat® 7 compatibility checked in your PDF settings to maintain live transparencies and avoid unwanted color conversion.

Impact multiplied

There are a couple of ways to multiply the value of Ultra HD Resolution with other features of the Versant 2100 Press to make the applications you produce more valuable to customers.

Use the power of personalization

Getting attention is the ultimate goal of any marketing application. Ultra HD Resolution does it with eye-popping image quality in text and graphics. Adding personalized content can magnify the impact and ROI of every printed piece.

Choose the right image and text

With variable data and software from XMPie®, a Xerox Company, you can choose the perfect image and text for each audience.

Print with the right image quality

With Ultra HD Resolution, every element you choose, from the boldest image to the finest text, prints with outstanding quality. It is another example of how you can design with freedom and print with confidence, knowing that your audience will see exactly what you intend.

Remove the variability from your brand colors

Need to preserve spot colors in your variable text and graphics—even if they are overlaying other images? No problem. Since the Versant 2100 Press is also Adobe® PDF Print Engine (APPE) compliant, spot color and transparency elements are rendered with accuracy, even on variable content.

Glossary of terms

Adobe® PDF Print Engine (APPE): APPE is optimized for end-to-end PDF workflows. It is integrated into the digital front ends that power the Xerox® Versant 2100 Press. Print Service Providers, print OEM solution providers, and designers will all benefit from its reliable reproduction of complex, graphically rich content.

Bit Depth: Bit depth refers to the color information stored in an image. The higher the bit depth of an image, the more colors it can store. The simplest image, a 1-bit image, can only show two colors, black and white. That is because the 1-bit can only store one of two values, 0 (white) and 1 (black). An 8-bit image can store 256 possible colors, while a 10-bit image can display about 1,024 possible colors.

Digital Front End: The brains of a digital printing system, the Digital Front End (DFE) is the ability to accept various file formats, process then render them so they can be output on digital presses. The Digital Front Ends that power the Xerox® Versant 2100 Press are powerful performers that accept and process files for static and variable data jobs. The Digital Front End helps provide consistency in color, quality, and accuracy, assuring print providers and customers that projects will be of the highest standards at all times.

GRACoL®: GRACoL stands for the General Requirements for Applications in Commercial Offset Lithography. It is a set of guidelines and recommendations to help print buyers, designers and specifiers work more effectively with their print suppliers.

Gradient: In the world of printing, the term "gradient" is used to describe a gradual blend of color or images from low to high values. Gradations can create a softening effect or blend on a printed piece. Most graphic software allows you to create a variety of gradient effects such as linear, radial, reflected, diamond, conical and angle. The Xerox® Versant 2100 Press with Ultra HD Resolution applies specific rendering and imaging technology to the reproduction of gradients, ensuring that they print smoothly and without objectionable contouring.

GrayFont Technology: The GrayFont technology in the Xerox® Versant 2100 Press provides optimized edge thickness and definition for text and graphics. GrayFont is a way of preserving the edge information by encoding it and using a special tag which any press that supports GrayFont can decode.

ICC Profile: Profiles are look-up tables that describe the properties of a color space; for example, GRACoL for CMYK or sRGB for RGB. The profile tells your press

what incoming CMYK or RGB recipes should "look like" to your eye. If you don't have a profile, the trio of Red, Green, and Blue values (or CMYK) that make up a color has no particular meaning—you can say something is blue, but not exactly which shade of blue. Accurate profiles are the key to a color-managed workflow. An ICC profile is a set of data that characterizes a color input or output device, or a color space, according to standards set by the International Color Consortium (ICC).

Line Screen: A line screen, or halftone screen, is the term used for the pattern of dots or lines that a printing process uses to simulate different levels of saturation on the printed page. The different linescreens available to you on a digital press are differentiated in lpi, or lines per inch. This number tells you how many dots or lines you will see in an inch, so a larger number means that you will see smaller dots and a smaller number means larger dots.

Object Oriented Halftoning: For customer jobs with a mix of graphics, images and text, the Xerox® Versant 2100 Press uses a technology called object oriented halftoning. This lets the press render images at one line screen for optimal smoothness, while text is rendered at a higher line screen optimized for sharpness.

PANTONE® Matching System (PMS): PMS colors allow designers to "color match" specific spot colors when a design enters production stage, ensuring consistent results across a wide range of production devices. The Xerox® Versant 2100 Press adheres to PANTONE standards so designers can continue to use this familiar and trusted color matching system for their Ultra HD Resolution print jobs.

Resolution: Image resolution is the detail an image holds. The term applies to raster digital images and other types of images. Higher resolution means more image detail.

Tint: In color theory, a tint is the mixture of color with white, which increases lightness. In the realm of digital printing, it is the percentage of ink that is added to white, specifically the white of the paper. Given that context, 100% means that the white of the paper is being completely covered with ink, while 50% means that half of the paper's whiteness is being covered with ink.

Ultra HD Resolution: Unique Ultra HD Resolution from Xerox® is a precise combination of increased RIP resolution, a proprietary VCSEL ROS and imaging path, and the EA Eco Dry Ink used to print images to paper.

VCSEL ROS: VCSEL stands for Vertical-Cavity Surface-Emitting Laser diode. It is the light source for the Raster Output Scanner (ROS, which is a scanning-type light exposure system) that writes images at 2,400 dpi during the Xerographic printing process.