Soft Proofing

Remotely Virtual or Virtually Remote?

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Whether you call it "soft proofing," "remote proofing" or "virtual proofing," the technology for viewing color accurate images on the monitor has finally arrived and it's gaining wider acceptance everyday. We are past the point of bleeding-edge, early adopters being the only users diving into it and more and more manufacturers are offering solutions to supplement their workflow and proofing products.

Before we go much further, it's a good idea to clarify some of the differences between hard, soft, content, contract and remote proofing.

Ok, so we probably don't need to define hard proofing; it's what you've been doing for years, either with a digital proofing system, an analog or film-based proofing system or perhaps even with a proof press. Don't worry, hard proofing isn't going anywhere anytime soon; the goal of soft proofing isn't to eliminate hard proofing methods, but rather make the usage of hard proofs more efficient.

So what exactly is soft proofing? It's basically viewing any image or page on a computer display—and really it's nothing new, we've been doing it ever since the introduction of color monitors. Decisions that affect the outcome of a particular job have been made from a soft proof for years, but we've typically limited these decisions to type corrections and position, or "content."

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A content proof could be a hard proof like a blueline or laser print, or it could be a form of soft proof such as native files (i.e., Photoshop, Illustrator, Quark, etc.), text documents or the ever popular PDF.

As the name suggests, the contract proof is the "money proof"—often the only proof that shows up as a line item on the customer's bill, because it is typically the final proof in a job, is color accurate and is truly the "proof" that the printer will use to match the press run to—not to mention a binding, legal contract between printer and customer.

And finally, the remote proof can be any and all of the above—soft, hard, content and contract, as long as it is viewed in a location different from where it was created. In some respects, even a proof delivered by courier can be considered a remote proof, but typically remote proofing is achieved with the help of an Internet connection. Obviously the benefit of the latter is near instantaneous delivery.

A new term being used more often is virtual proof, which is essentially just a way of saying that a proof, be it content or contract, exists only as electrons on a screen and not on paper (well, at least not until *Star Trek* technology allows us to "beam up" our proofs). Typically, "virtual proof" and "remote proof" are used interchangeably.

There are several commercially available remote soft proofing solutions and the majority of them are intended for use as content proofing systems (including systems from Creo, Dalim, Group Logic, Lucid Dream, RealTimeImage and others).

Color accuracy is an obvious requirement and color management is the cornerstone of any color accurate soft proofing system. In fact, color management is the only thing that has made inkjet a viable proofing solution.

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There are far fewer soft proofing options (including systems from Integrated Color Solutions and Kodak Polychrome Graphics) that can be considered color accurate enough to be used for contract proofing because the demands of the technology are so much greater. We will spend the rest of this article focusing on the color accurate remote soft proof (or, if your prefer, the virtual proof).

Remote Proofing Expectations

If you are going to invest in the implementation of a color accurate remote soft proofing solution, it is probably safe to say that you intend to replace some or all of the hard proofs that are currently being produced. You should treat the color accurate soft proof like any other proof—first and foremost, this means that you must fight the urge to devalue the remote soft proof.

We've been e-mailing PDFs back and forth for years and typically this is a free service provided by the printer or designer, but color accurate remote soft proofing is more than just e-mailing a PDF file to a client. It is a proof that you are guaranteeing is a color accurate match to the final product—essentially all the same claims you've always made for any contract quality hard proof still apply. There are production costs associated with color accurate remote soft proofing, the same as with any hard proofing solution, both in equipment as well as operators trained with color experience.

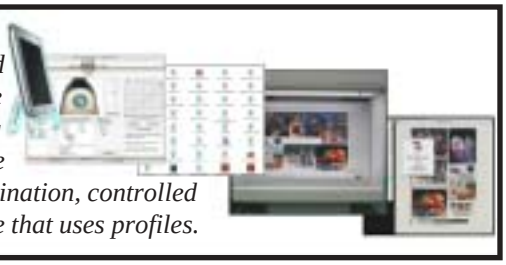
There are many examples where providers of color accurate soft proofs are continuing to charge their clients the same as they always have for the hard proofs.

In order to be successful, there will be a requirement of educating your clients that the value of the color accurate remote soft proof is equal to the hard proof; it is hoped this article can provide some positive arguments to support this case.

We would never suggest that you sacrifice the comforts of a hard proof in any portion of the workflow if color accurate soft proofing could not provide the same (or perhaps better) capabilities. Aside from folding the proof down (and that's coming sooner than you think), you can do everything with a soft proof that you can with a hard proof: view it for color and content, mark it up, see how the image will print on the final stock, view spot colors, view two proofs side by side, provide legal sign-off, have several people view it simultaneously or consecutively, and even archive it for later viewing. Consider the following examples.

Color accuracy is an obvious requirement and color management is the cornerstone of any color accurate soft proofing system. In fact, without color management we wouldn't have come as far with digital (hard) proofing as we have come—it is the only thing that has made inkjet a viable proofing solution. Color management and calibration of the computer display means we can consistently produce colors accurate to the press, including the simulation of the printing stock and with no fear of the proof fading or changing color. ICC color management also means that spot colors can be simulated with a very high degree of accuracy.

You can throw out the permanent marker in favor of electronic notations on the screen. Annotations stay with the soft proof for as long as the proof exists. Each proof viewer (client) can make his or her own



A soft proofing system should include a color accurate capable display, calibration/profiling software and hardware, accurate ICC Profiles for source and destination, controlled viewing conditions, and software that uses profiles.

comments, and the proof producer (host) can see and act on them instantaneously. Many systems provide for a legal sign-off; electronic signatures are quickly gaining acceptance and are recognized by the courts to hold the same validity as a sign-off using ink on paper.

Even though many users are beginning to utilize color accurate remote soft proofing in several parts of their workflow, some of their customers are still more comfortable signing off on a tangible hard proof from a contract quality digital proofing system. In order to accomplish this, some soft proofing systems are adding the ability to print a color accurate hard proof from the same data—thus having a soft and hard proof that represent the same color match (to press).

Soft proofing does not have to be the only solution; it should be able to work anywhere in a workflow—from scanned images to design comps to pages to signatures to trapped and halftoned files, all the way to press—and at the same time work side by side with hard proofing systems.

Remote Proofing Requirements

Probably the one distinction between hard and remote soft proofing is that hard proofing only requires that the proof producer have the technology to make the proof; there are few requirements to view the proof (other than the viewing environment). It simply won't work if only the host has a color accurate display and the clients do not.

Following are several components that are required for a color accurate remote soft proofing solution. There are several options for each component.

Controlled Viewing Condition

Just as you wouldn't allow a client to comment on the color of a hard proof by the light of an open window, neither should a soft proof be approved in an uncontrolled environment. In fact, the viewing conditions for color accurate soft proofing are identical to those for hard proofing. The color temperature for viewing should be an established standard—the graphic arts standard in the United States is 5000º Kelvin or D50. Color temperature of a monitor is controlled as part of the calibration procedure. Ambient light should be at a minimum, preferably with variable intensity control and at the same color temperature (D50). The walls or surround should be of a neutral gray (Munsell #7 per the ANSI standard). Even bright-colored clothing worn by the proof viewer can have an effect and should be considered.

Color Accurate Capable Display

Displays need to be able to accurately render a wide range of colors and tones—a 24-bit (or new 30-bit) display is required. The size of the monitor should be adequate to view the types of proofs for the workflow, even larger two-page displays can take advantage of a second display for all of the tool palettes.

There has been a lot of controversy over the choice between Cathode Ray Tube (CRT) or Liquid Crystal Displays (LCD) and there are arguments for both technologies. While CRTs typically have a longer life and exhibit more consistency across the display, LCDs can produce a much higher luminance (120-200 cd/m2 vs. 85-95 cd/m2 on a CRT), which is critical for matching both the white and black points. Regardless of which technology is used today, it's evident that displays are only getting better and better for soft proofing with each generation.

Color Management & Calibration

Profiling software actually performs two functions. First, it calibrates the display to specified luminance, contrast, gamma and white point. After the calibration is completed, the display profile is built on top of the calibration. The parameters of calibration can be common among many monitors and are usually specific to the preferred viewing conditions for the proof (i.e., all calibrated to D50), however the profile is unique to each monitor, characterizing exactly how each monitor represents color from the data it's provided. The calibration and profiling conditions should be noted (recorded) because displays can drift; a user could select a different profile, or a different calibration could replace the original condition. Without this information, it would make it difficult to view a soft proof again with any confidence that it was the same each time it is viewed.

In remote soft proofing, it is also necessary to be able to verify the calibration of not only the host display, but also of any clients viewing for color, this can either be done through the soft proofing software or by picking up the phone and confirming that all displays are calibrated equally. Both calibration and verification are achieved with the use of an emissive measurement device (spectrophotometer or colorimeter).

Color accurate remote soft proofing allows a competitive advantage, not only because it is the hot technology, but also because it provides efficiencies to the production workflow.

Connectivity & Proof Access

Remote proofing implies that the proofs are being viewed in a remote location. It is necessary to have some method to deliver the proof from the host to the client(s). The most popular methods utilize the Internet infrastructure; a high-speed connection is highly recommended. With some systems, the host uploads a file to a remote server that all clients log into to view and mark-up the proof. Other systems use a point-to-point connection where all clients are given access to view a proof on the host's system.

When selecting a remote proofing system, consideration should be given to security issues; less secure systems tend to be easier to implement while more secure systems require a higher level of support from the host and clients IT departments. Collaborative systems allow several clients to view the proof simultaneously, while other systems move the proof from host to client to client in a successive fashion, and there are some systems that allow for both.

Remote Proofing Benefits

There are several measurable benefits to using a remote soft proofing system. The single greatest benefit is increased customer loyalty and improved communication between all parties involved. Clients have the ability to be more involved in the process from concept to delivery while actually improving productivity rather than causing costly production delays.

Another obvious benefit is the amount of time saved. Proofs are created instantly, as there is no waiting on a printer for output, processing or drying. Proofs are instantly viewable by host and clients and there is no need for courier delivery of soft proofs, saving both time and money. When used collaboratively, correction cycles that used to take days can be done in hours or less, and over long distances.

Anyone in the business of supplying color proofs to their customers would be well advised to look at the options available and be ready to offer the solution to their customers.

Costs of manufacturing are reduced, because there are no physical consumables (paper, ink, toners, etc.) to purchase or inventory. In addition, there are no processor or chemical requirements. Because soft proofs are made from virtual consumables, there is also no risk of materials expiring or running out.

Remote soft proofing increases quality assurance through verification because a display can be validated that the color it is showing is the same as it was when the proof was approved. Whether the proof is viewed immediately or even days, weeks or years later, displays can be re-calibrated to view the proof again as it was originally approved and there is no risk of the proof fading or changing in color.

Simulation of spot colors tends to be much more accurate on the display because a display's gamut is larger than most hard proofing systems, allowing many more spot colors to be proofed with a greater degree of accuracy. Some hard proofing systems don't even allow for any simulation of spot colors. Most systems also allow for the ability to see additional varnish and die-line channels.

Color accurate remote soft proofs can be brought to the press-side not only allowing the press crew to run color to a signed-off proof, but also in permitting the reverse. Options are now available that allow press operators to scan in a press sheet on a high resolution profiled scanner and make it available for remote press approvals, meaning that the requirement for the client to be in the pressroom during the run can be eliminated (thus resulting in further savings in travel costs for the client). This gives more opportunities to printers in remote areas to better compete with the printers in metropolitan locations that are often closer to the major customers.

Acceptance

According to a recent GATF (Graphic Arts Technical Foundation) test between monitors in a remote soft proofing environment, 85 percent of patches measured were < 1.9 DeltaE CMC, with a peak 3.9 DeltaE CMC (best monitor: peak 2.3 DeltaE CMC).

In a visual comparison, comparing monitor to press sheet of four images by 37 people (from the graphic communication industry), participants were asked if they would accept the images as a contract proof when compared to a SWOP (Specifications for Web Offset Publications) certified press sheet based on brightness, contrast, saturation, highlight, quartertone, mid-tone, three-

quartertone and shadow. An average response over the four images was that more than 75 percent would accept the soft proof.

Although color accurate soft proofing has been proven to work, there is still much education that is necessary for both users and consumers of remote soft proofs to understand where they best fit within the workflow (as this may be different for each scenario). With better understanding, wider acceptance will continue to grow quickly. Technological advances continue to add functionality and productivity to the process.

Color accurate remote soft proofing allows a competitive advantage, not only because it is the new “hot” technology, but also because it provides efficiencies to the production workflow.

Anyone in the business of supplying color proofs to their customers would be well advised to look at the options available and be ready to offer the solution to their customers.

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