



### Why Can't I Use ShowCase Over Remote Desktop or Terminal Services?

Remote desktop solutions such as Windows Terminal Services, Citrix, LogMeIn, GoToMyPC, DaaS, PCoIP, etc. are designed to provide a functional approximation of your desktop for reading documents and interacting with some of your software. It is not designed to render accurate color or display diagnostic-quality medical video.

ShowCase is an FDA regulated medical device that has been designed to assure that ShowCase renders images at their maximum diagnostic quality using accurate color, gray scale range and playback rates. Any changes in image quality are clearly marked for the user. Therefore, it is incompatible with our FDA clearance to use ShowCase viewers with remote desktop software. **Use of the ShowCase viewer through remote desktop is not an intended use of ShowCase, and our staff cannot support such configurations.**

The key issue is image quality. To save bandwidth, most solutions do not show the full 24-bit color range, so render a very limited number of gray values, less than needed for full diagnostic image quality. Video playback over remote desktop often has dropped frames and erratic playback.

Remote desktop viewing is limited by network bandwidth and load, which is what leads to frame loss, additional image compression and 'shearing' as the remote desktop software samples the screen, approximating the changing pixels of the original clip. Clips are intended to play at a rate determined by the ultrasound machine, typically 30 fps, sometimes higher, especially in pediatric studies. These rates will not usually match the sampling rate of the remote desktop software. Degradation in image quality can worsen dramatically as network loads change.

As clips degrade there is no clear indication that the degradation is happening unless it is degraded enough to produce freezing or stuttering in playback.

In some scenarios subtle alterations to the quality of the image are not obvious but could affect diagnosis.

#### PCoIP, build-to-lossless, and other High Image Quality Implementations

Substantial improvements have been made to provide high quality image solutions in some Remote Desktop solutions. If properly deployed, these solutions can result in medical grade image quality for **still images**. We have not been able to locate any peer-reviewed studies or recommendations from medical professional organizations (such as the ASE), that indicate these techniques are safe for use with **medical clips**. As a result, we have to assume these techniques still could result in a misdiagnosis.

#### How to Achieve Full Diagnostic Quality

If you need a remote viewing solution, Trillium Technology's ShowCase Image Center product can safely and efficiently deliver full quality DICOM images to remote viewing stations running ShowCase Premier. The images are not compressed or altered in any way, so there are no quality issues.

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