

Guide to Video Quality

Video Quality can be impacted by a variety of sources, sometimes in combination.

Cameras and video capture

Different cameras and video capture sources will have different default settings, sensors, lenses and drivers (even within the same manufacturer and product line). The following screens were all captured using H.264 encoded video on the same computer system and location with cameras installed at their default settings, and serve to illustrate the quality differences that can exist between camera models.

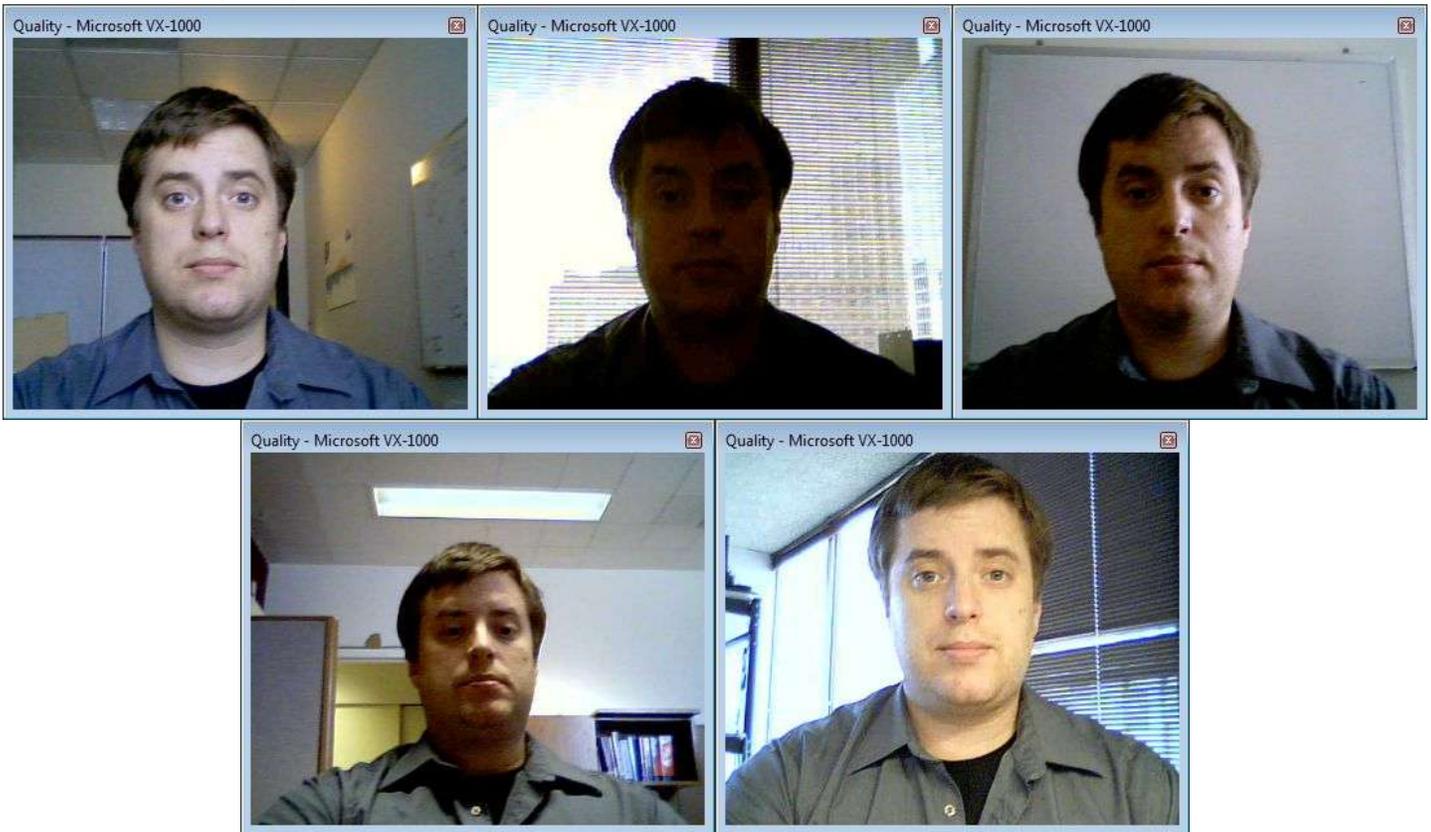


Lighting conditions

Computer-controlled video cameras adapt to the current lighting conditions. They will tend to adjust based on the brightest object in their field of view. In most cases, you'll want to have some light deflected or directed at

the user's face from a forward angle. Wearing a white shirt can help. Consider the following images when analyzing and planning the lighting in your room.

The following images were all taken from the same position in a room near a window on a cloudy day.



A bright window behind an unlit subject will cause the camera to adjust the subject's light levels much lower. Many cameras and capture devices have a "backlight" feature to help compensate for this.

The last image has the natural light in the background, but the subject is close to a desk lamp which counteracts the strong backlight behind him. Some wash is seen on the left side of the face, but the subject is fairly well lit. For best results, have a well-lit subject close to a neutral-colored background.

Flickering

Flickering can be the result of faulty camera hardware or loose connections. You might try using a different connection from the camera to the computer if one is available. In some circumstances, flickering may be apparent in the video image that may not be apparent to a person in the room. This may be caused by the frequency of the electrical service in relation to the frequency of the camera or capture device. A common example is 50Hz fluorescent lights in a room with NTSC 60Hz standard cameras. Some web cameras and capture devices can be configured to change between the different frequencies, but sometimes this requires a different camera choice.

Codec selection

IOCOM Software includes several different codec choices to provide compatibility with your available bandwidth and the capability of the people you meet with. The codecs transmit video at a fixed resolution, which is approximated when you change the size of the video window. Observe the 4 samples below:



H.261



H.264-small



H.264-medium



H.264-large

H.261 provides a 352x288 (also referred to as CIF) image with very little compression (it uses more bandwidth). It also segments the image into blocks, which can create a stuck pixel effect when the image changes (commonly referred to as "artifacting"). It is mostly used for compatibility with other conferencing systems or in certain network conditions.

H.264-small is the lowest bandwidth codec, providing a 176x144 (quarter CIF, or QCIF) image that looks fine at a smaller size but will lose quality as it gets larger. Its the best choice for people operating on satellite or low-bandwidth DSL and cable connections.

H.264-medium is also a CIF image, and provides a good tradeoff between resources needed and quality produced. We recommend that all cameras be set to H.264 medium unless there are compatibility considerations or insufficient bandwidth.

H.264-large is a 640x480 (referred to as VGA) image. It looks crisper in the same image size, but it is also using significantly more resources to produce the image. Its a good choice if the detail on the image is important, or if a larger image size will be displayed on the screen.

IOCOM also supports High Definition (HD) Video Codecs, in qualities ranging from 720p to 1080p. These require a camera capable of capturing HD images and a high speed network connection to both send and receive them.

Load and Loss

Encoding, decoding and transmitting video can be very demanding on computers and networks. This becomes more apparent when a video image has a high amount of motion/activity; when more pixels change, more information must be sent. Waving your hands rapidly in front of a video stream will increase load.

Video and Audio content being dropped is referred to as **loss**. This will be most apparent to the user in terms of choppy video performance (no longer smooth, the image freezes a certain points before resuming) and sometimes audio performance as well. Closing unnecessary video streams (both sent and received) and lowering codec quality can provide relief from Loss.

You can gauge the amount of loss in the bottom corner of a video window, or for the whole conference by viewing the Network Statistics window (found in the menu Tools > Network Statistics). This should also give you some idea of how much relief you are gaining by making adjustments

It is also quite possible for Loss-related problems to reside on the network itself, outside end-user control.

Cabling

Cables should ideally be securely fastened and ideally directly connected to the source. It is possible for long cable runs and the use of adapters and splitters to degrade video performance. If you are having a quality issue that can't be attributed to any of the other issues listed above, try connecting the camera directly to the PC to see if that helps.

Additionally, different cable connection types can produce different results. An S-Video connection, where available, can provide an increase in picture clarity.

Software settings

Some software settings (such as picture controls or the incorrect selection of a PAL/NTSC standard) can produce poor picture quality results. These settings are specific to each manufacturer. Refer to the product documentation for your video capture card/camera for more information on how to configure the software properly.

Network Loss

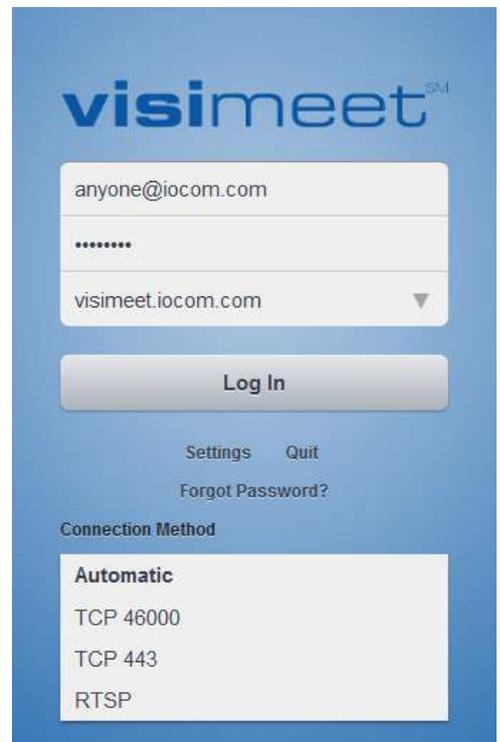
This is due to some device on the network between the sites dropping packets containing video information. Loss indicators on the left side of the site listing flash yellow and red when loss is present on the network. When packet loss is present you may notice pixels stuck, image blurring & loss of image. Close unnecessary video windows and stop sending unnecessary cameras to free up network resources. Advise the network administrator of the issue; they may need the IP address of the machine, IP address / server name of the UCS and ports currently in use (Help> About will bring up the last 2 pieces of information).

Connection Method

Visimeet offers a few types of connections methods that can greatly affect the quality of the connection.

From the Visimeet Login page (you may have to logout) The Connect Method can be found by clicking Settings.

The default is Automatic. Try the different options in turn to see if performance is improved. The TCP 46000 method is designed to pass through firewalls with the most reliability while RTSP is best for networks with high latency such as satellite, remote locations or mobile networks.



The screenshot shows the Visimeet login interface. At the top, the 'visimeet' logo is displayed. Below it are three input fields: the first contains 'anyone@iocom.com', the second contains masked characters '*****', and the third contains 'visimeet.iocom.com' with a dropdown arrow. A 'Log In' button is positioned below these fields. Underneath the button are links for 'Settings', 'Quit', and 'Forgot Password?'. At the bottom, a section titled 'Connection Method' contains a list of options: 'Automatic', 'TCP 46000', 'TCP 443', and 'RTSP'.