

# Guide to Video Quality

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Video Quality can be impacted by a variety of sources, sometimes in combination. See the following links for more information.

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## 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.





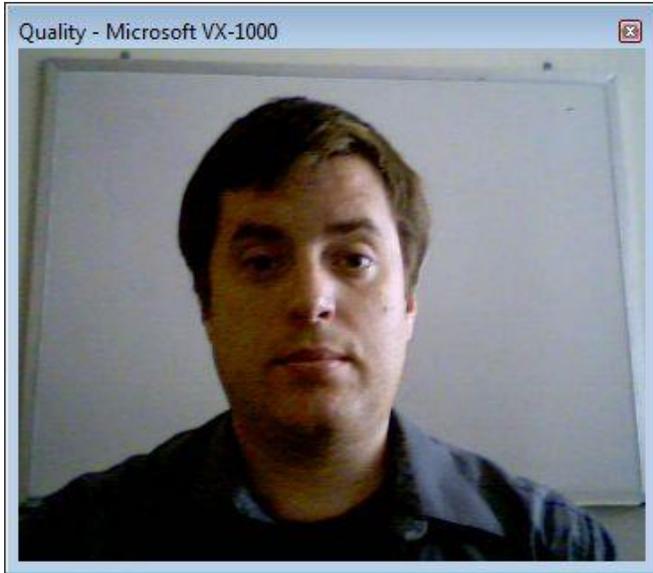
### Lighting conditions

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.

### *Placement relative to a window:*

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

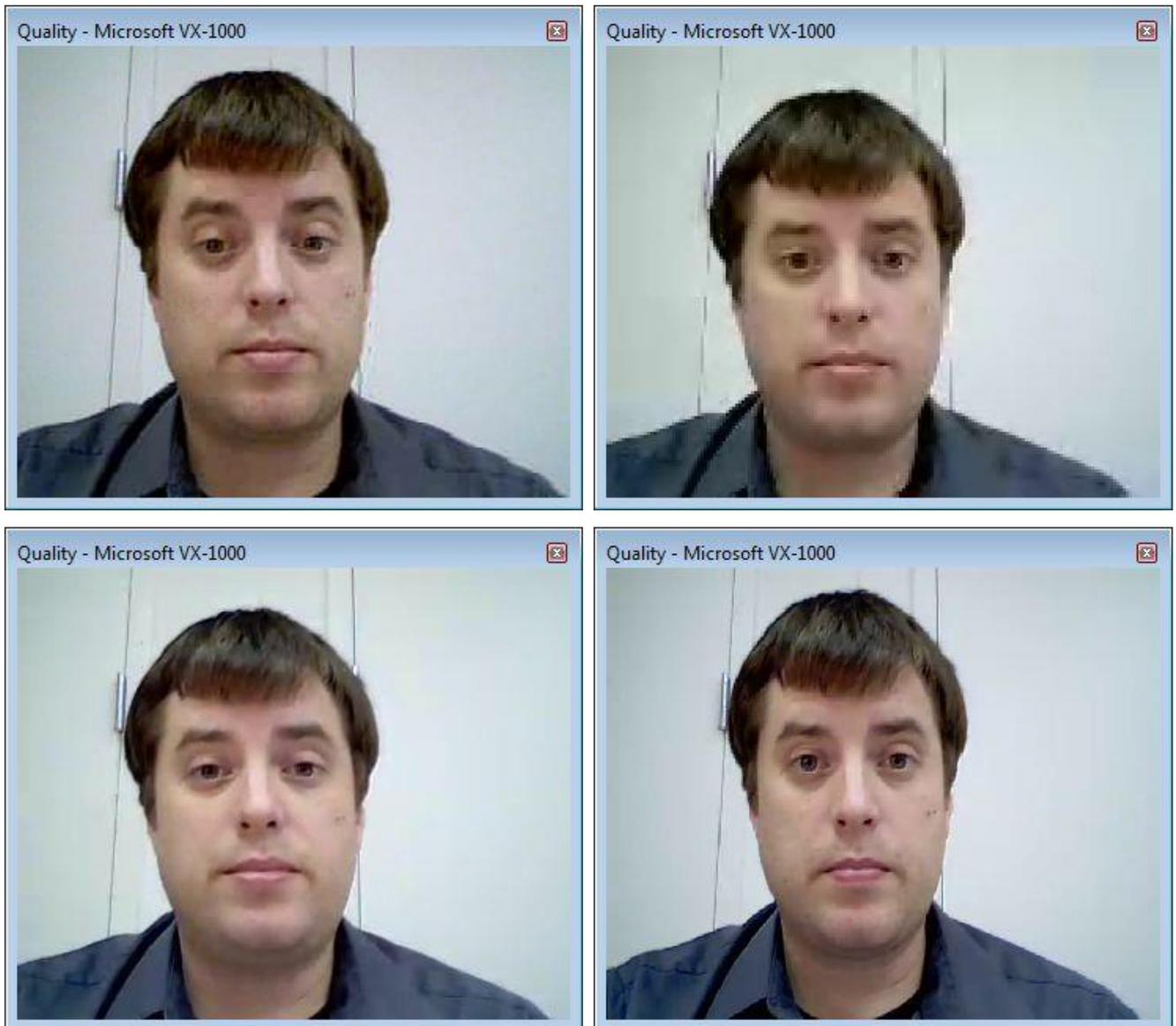
Flickering can be the result of faulty camera hardware or loose connections. You might try using a different connection from the camera to the computer if one is available.

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

NHS ONE 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 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.

NHS ONE 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 Video Statistics window (found in the Video Options menu). 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.