Video Conferencing Performance Issues

Video conferencing, using Zoom, Skype, Teams, or similar, is much more demanding on the network than either browsing web pages or streaming films. This is because a video conferencing session requires not just a reasonable broadband speed (quantity) but also a good quality connection, as the flow of data in both directions must be constant, without any slight delays or interruptions, however short.

When you view a web page, any slight delay in the data arriving is not usually noticeable, while for video conferencing, even a delay of a second can be significant. When streaming video content, such as YouTube, BBC iPlayer, or similar, the video traffic is one-way, and your computer normally buffers some content in advance in order to smooth out transient delays. This approach is not possible for video conferencing sessions as the sessions are interactive.

Most broadband speed checkers just measure the overall speed of the connection, not the quality of the connection, so they are not helpful in diagnosing problems with video conferencing sessions. Broadband speeds are measured in megabits per second, Mbps. Depending on the internet provider, the speed can vary from 4Mbps to 100Mbps or greater. Even a 4Mbps connection is adequate for video conferencing, as a video session typically requires 0.6Mbps. This can vary, and is greater for high-definition video. A faster broadband connection does not necessarily mean better video conferencing sessions, as the quality of a connection is independent of the speed.

Measurement

For the technically-minded, the quality of a connection is measured in several ways:

Latency: the delay between packets of data being sent and received. For a video conferencing session, the latency needs to be less than 150ms.

Jitter: this is the variation in time between packets arriving. For a video conferencing session, the jitter needs to be less than 40ms.

Packet loss: the percentage of packets that fail to arrive. For a video conferencing session, the packet loss needs to be less than 2%.

These recommendations are taken from:

https://kb.unca.edu/help/distance-learning-services/broadband-equipment-and-testing/bandwidth-management-for-zoom

The data for a video conferencing session usually has to travel a significant distance: from your computer to the data centres for the conferencing system - Zoom, Microsoft, Google etc. These are usually in Europe or the US, then it travels on to the other people in the video call. Any congestion along the route will result in garbled speech or video pictures. The congestion may be outside the control of your broadband provider as multiple network providers are

involved. For some internet providers, the congestion increases at peak times - in the evenings, when many people are using the internet, watching films on Netflix or videos on YouTube.

If you are using WiFi, a poor WiFi connection can cause problems with Zoom meetings. WiFi connections have a limited range, and are affected by having to pass through solid walls or floors. In addition, WiFi is a shared medium, so the available bandwidth for a Zoom connection is reduced if other people are making significant use of the WiFi in your house.

Adrian, 14/2/2021