

Latency in Telepresenters

Effective Collaborative sessions

NCast developed the Telepresenter as an effective way to do high-quality multimedia productions for remote or on-demand audiences. The driving market requirement was quality, both in terms of offering the highest resolution and fluid frame rates in all motion portions of the multimedia event. Based upon these requirements, the Telepresenter was optimized for quality, and not for bi-directional latency.

However, there was a strong need for collaborative capacity as a secondary requirement. Sometimes this was true full duplex communications among many participants, and other times it is simple Internet Chat or back-channel audio. The NCast engineering team implemented optimizations to make such collaborations fluid and responsive without sacrificing either resolution, frame rate or throughput.

This Tech Note is for Systems Designers looking for a Webcasting appliance that has low enough latency to support bi-directional communications.

First, let's look at some simple latency measurements:

In this first example, a Telepresenter™ M3 Series 2 was set as the sender and an older M3 as the receiver. Latency was measured twice during 5 minute transmissions.

25fps @ 5Mbps, DVD movie input

- VGA - 203ms, 224ms
- XGA - 1004ms, 327ms
- UXGA - 1213ms, 1045ms

As one might expect, latency rises with the video resolution. Also, looking at the XGA

numbers, one can see the effect of a large number of MPEG I-frames on the latency.

Here are sample end-2-end audio latency values. Like before two tests of about 5 minutes were run. Audio was encoded on the M3 Series 2 and decoded on the S3.

1. 44100Hz stereo: 348ms, 367ms.
2. 44100Hz mono: 483ms, 473ms.
3. 22050Hz mono: 631ms, 656ms.
4. 11025Hz mono: 816ms, 838ms.

Audio latency grows a little as the sample rate drops, since longer segments are digitized and packetized.

In summary, if latency is the critical factor, a good Videoconferencing system is probably your best choice. If quality and performance are your key requirements, nothing beats the NCast Telepresenter.