



Implementing Playback Delay Across Multiple Sites with Dramatic Cost Reduction and Simplification

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APPLICATION NOTE



Introduction

Media users such as houses of worship, education, health, government and corporations are taking advantage of the cost-saving benefits of setting up remote locations instead of expanding current main facilities.

Expanding a main facility is costly in two ways: hard CapEx costs — including equipment, building expansion and additional parking requirements; and secondary issues

including additional staffing, managing additional paid and volunteer crews, and dealing with the perceived participant alienation which can occur with remote outreach.

Remote locations have significant advantages, which include shorter commutes for participants, and more opportunities to participate as speakers, performers and coordinators.

With a large staff often comprised of volunteers spread among two or more facilities, it is impractical to expect that each venue would end their individual programs, performances, and announcements at exactly the same time so that the presenter at the main facility could be viewed live and simultaneously at all remote venues.

The Plausibly-Live (Time-Slip) Workflow

With timing at remote locations always questionable, most organizations have conceded that they need to record their incoming feed(s) from the main facility so they can be cued-up to the beginning of the presentation and ready to play as soon as the local event location is ready to see it.

Most organizations in this situation send their iMag feed to the remote locations. Smaller remote locations will only have a single large screen and therefore can make good use of only the one feed. But there are many, many variations. For example, iMag at the main facility may not use “color shots” — wide-angle sweeps, close-ups, graphics and speaker notes, which may be on secondary screens. This tends to alienate remote viewers when the iMag video is the sole representation of the event. In these cases, the main facility may employ some form of dual-feed switching to present a more venue-friendly

feed to the remote locations.

At the remote locations, time-slipping the main feed is rather straightforward by using the operational model that NBC popularized during the airing of the 1996 Atlanta Summer Games with the Grass Valley/Tektronix Profile video server. The “remote” (main facility) feed is recorded onto a server, with the clip loaded into a player, and cued up to the start of the presentation where it sits until needed.

A typical installation for this use could include some version of the Omneon Media Deck (typically configured upwards of US\$45,000 for 1-in/1-out). A considerably more limited approach could be an AJA KiPro used at the main facility to record a Saturday night performance or service, then the unit itself (or one of its hard drives) is hand-carried to the remote location for playout as needed the next day (or even on a 1-week delay). As

nice as the KiPro is for capture to nonlinear editing systems, it was never intended to be a live playback device, lacking the ability to easily cue to a point and mark it as an “in,” cue to an exit point and mark it as an “out,” and then return to the in-cue point. A user cannot even get a countdown to the end to ease transitions from playback to live during an event.

The perception that “Grass Valley is nice, but priced out of our budget” is untrue for these circumstances, with solutions that are within budget and easily learned by part-time and volunteer operators.

In fact, our off-the-shelf K2 Solo portable media server costs less than an Omneon Media Deck while giving users a much simpler interface as well as an easy upgrade path to dual-stream “time-slip” functions described as follows.

Telepresence At Event Facilities

To electronically simulate an attendee's presence at an event, an iMag feed (exactly like the one used in the main facility) and a fixed, "center camera" or "stage camera" is mounted front-and-center in the audience to provide a high-definition (HD), fixed field-of-view shot of the main presentation area (the stage) to be projected on a much larger center screen at the remote campus.

This dramatically complicates the operation for most people. Difficulties can come from several areas, but one of the worst is in the configuration of a standard-definition (SD) iMag feed (all tight shots on a smaller screen) combined with an HD center stage feed sent over the same transmission medium. With compression, decoding and the latency in the transmission itself, there can be a significant time offset between the two feeds. While upconverting the SD signal to the same HD format as the center camera is a start, it is not enough. The upconverted iMag video and the HD center camera video are genlocked together to avoid any in-

ter-channel latency differences which would affect the synchronization between what is shown at the remote location.

In many cases, additional audio channels are carried to provide translation service from the main facility to remote venue wireless earphones and dedicated "ambience" signals to help remote attendees feel better connected with the main campus as they hear that audience's reactions.

This 2-feed path can be addressed by Omneon, but the price for this configuration adds US\$15,000-25,000 to the base configuration of the Omneon Media Deck. Based on direct customer feedback, the Omneon user interface is very unfriendly to volunteers.

Quite often, Renewed Vision's ProVideoSync (PVS) software running on a PC is used, typically with a pair of BlackMagic Design output cards to provide playback. Unfortunately, this also means that separate PC/software/capture hardware must be used to acquire the signals, and only after they are finished

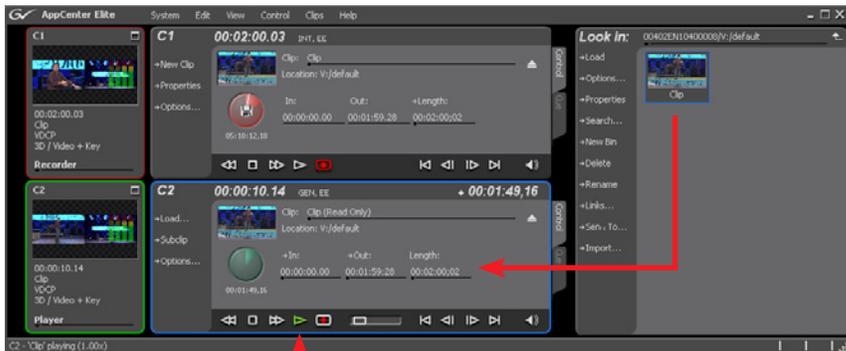
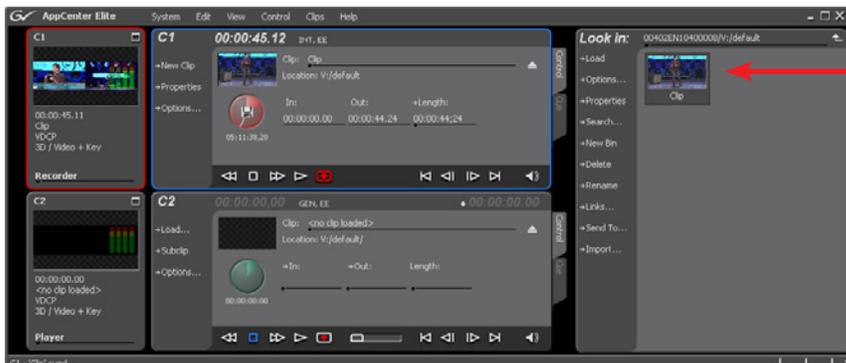
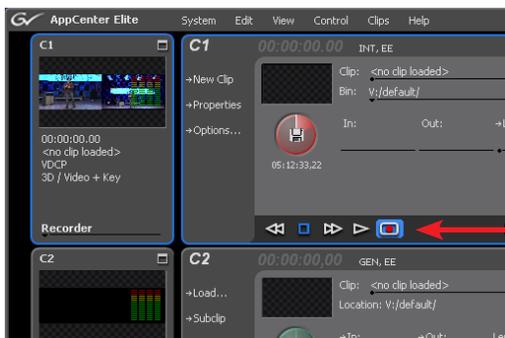
can they be sent to the PVS PC for playout. Getting the files in sync (and keeping them there) presents opportunities for disaster. This is based on multiple customer and integrator comments. This configuration is limited to delaying feeds to the point that they do not playout until after the live feed is finished recording.



Grass Valley – Simple, Synchronized Remote Playback

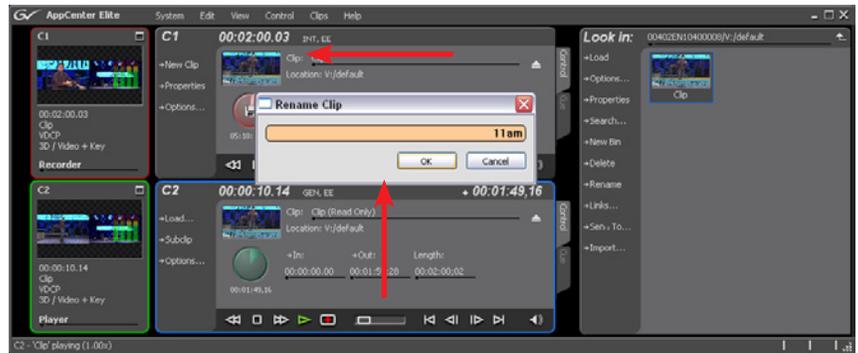
In a single-channel configuration, an off-the-shelf K2 Solo performs well in the plausibly live time-slip application. Operation is simple and straight forward:

- 1) Start the K2 Solo recording at the beginning of the presentation/performance from the main facility. To begin instant playback while recording, drag the new clip into the K2 Solo player channel, and hit play.



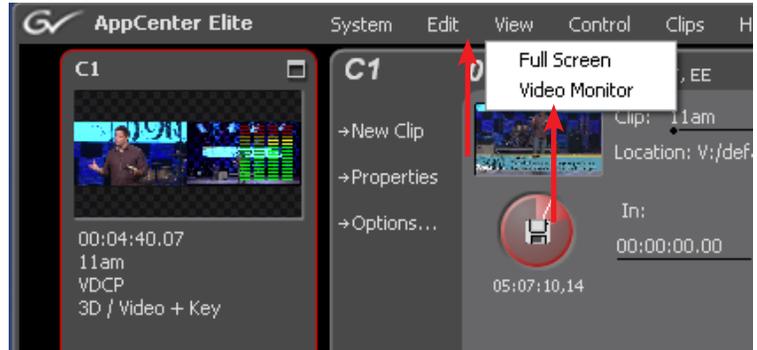
Grass Valley – Simple, Synchronized Remote Playout (Cont.)

2) While recording, and as time permits, name the clip, and give it a duration so as to not fill up the server if no one remembers to stop the recording at the end of the event.



Grass Valley – Simple, Synchronized Remote Playout (Cont.)

- 3) Set the multiviewer user interface to View → Video Monitor to better view the incoming feed, watching for events that require action, such as customized local roll-ins already stored within the K2 Solo.
- 4) For a local roll-in, cue the player to the start of the message.
- 5) To start the local roll-in, hit the spacebar (play) to play the video.



It hardly gets simpler. Of course, Grass Valley's AppCenter gives users a number of different ways to accomplish this, but this method results in a complete recording which could be replayed on demand for repeat presentations.

The best part is that even with two video signals — an iMag plus a center stage video — Grass Valley's AppCenter Elite makes sure that the workflow is unchanged.

There's re-learning, and no opportunity for the feeds to ever get out of sync with each other. This appears to be unique in the market based on the surprised reactions from multiple system integrators, resellers, con-

sultants and end users. In dual-stream mode, one channel is configured for 3D/Vid+Key (two-stream) recording, while the second channel is set for 3D/Vid+Key (two-stream) playback. This creates a single clip with two video tracks that are controlled as a single video clip and is NEVER out of sync!

There's even the ability to use a K2 Solo at the main facility to relieve the constant stress of having to produce multiple live shows/services throughout a day. A growing trend is to have later audiences be partially addressed with the playback of a previous event, mixed with live elements. In this scenario, the iMag plus center stage recordings of an earlier presentation (largely managed by ProVideo-Sync today) can be utilized at the main facility with the very same simple user interface and workflow enjoyed at the remote locations.

The Grass Valley Solution — By The Numbers

SINGLE-STREAM

Plausibly Live Time-Slip Server:

Quantity 1: K2 Solo (with AppCenter)
 (Optional) Quantity 1: K2-XDP-AES-CABLES*
 (Optional) Quantity 1: K2 Solo-RACK

DUAL-STREAM

Plausibly Live Time-Slip Server:

Quantity 1: K2 Solo Elite (with AppCenter Elite)
 (Optional) Quantity 1: K2-XDP-AES-CABLES*
 (Optional) Quantity 1: K2 Solo-RACK

*The audio is typically embedded at a remote location as a function of the transmission system. However, the audio system in place at the remote location may not have a way to access the embedded audio from the K2 Solo. Be sure to check for this, and whether or not “throw-down” types of AES-to-analog audio converters will be required.

Comparing Solutions — Numbers & Features Matter

SINGLE-STREAM

K2 Solo vs. Omneon Media Deck vs. Renewed Vision PVS
 (As typically deployed by system integrators.)

	K2 Solo	Omneon MEDIA DECK**	Renewed Vision ProVideoSync**
Price	US\$19,900	>US\$40,000	>US\$12,000
User Interface	Simple, 10-minute training	Difficult, multi-hour training	Complex management issues
Clip-Turn Time	<3 seconds	<15 seconds	Recording must first complete on user-supplied system, then transfer to PVS host PC

DUAL-STREAM

K2 Solo vs. Omneon Media Deck vs. Renewed Vision PVS
 (As typically deployed by system integrators.)

	K2 Solo Elite	Omneon MEDIA DECK**	Renewed Vision ProVideoSync**
Price	US\$29,900	>US\$65,000	>US\$40,000
User Interface	Simple, 10-minute training	Difficult, multi-hour training	Complex management issues
Track Sync	Permanent	Channel gang, clip trim/marks needed	Manual alignment and “bump” capability during playback
Clip-Turn Time	<3 seconds	<15 seconds	Recording must first complete on user-supplied system, then transfer to PVS host PC

** Based on integrator/reseller configurations from volunteered customer commentary.

Conclusion

Grass Valley's K2 Solo provides a better way to manage and deliver remote location presentations sent from a main facility. Single- and dual-channel video streams can be easily recorded and almost instantly (within three seconds) played out for remote audiences, with the ability to insert locally-stored videos targeted to each specific audience. When used for dual-stream mode, the two video streams never lose synchronization.



www.grassvalley.com/products/k2