

## Protocol Timecode on K2

K2

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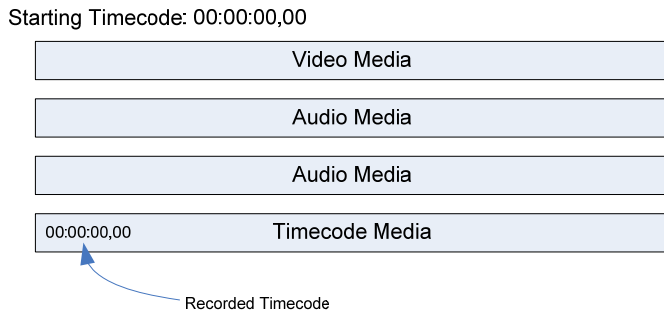
<b>Date</b>	<b>Revision</b>	<b>Description</b>	<b>Author</b>
1/9/2007	0.0	Initial	Mark Hillebrandt

## 1 Timecode Limitations in VDCP

As server systems become more complex, clips are ingested from a variety of sources. A VDCP playout controller cannot assume that a clip was ingested from a VDCP recorder with the same assumptions about timecode. Unfortunately the VDCP timecode model is limited and does not work for clips from all sources. The result is a cueing error. This paper describes how K2 software addresses this problem and maintains backward compatibility.

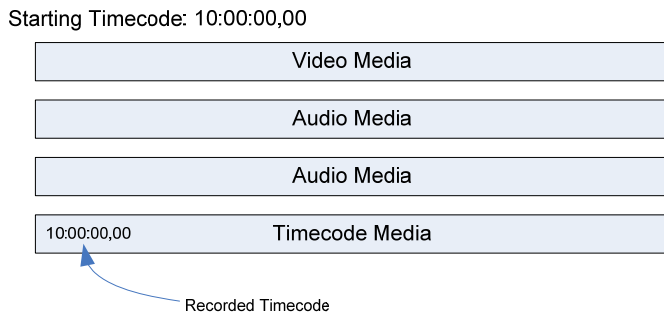
## 2 How Timecode is stored in K2

K2 clips contain both a starting (generated) timecode value as well a track of timecode media recorded from a VITC, LTC, or Internal source. When a clip is crash-recorded using VDCP the resulting clip looks like this:



Both the starting timecode and the timecode media start at 00:00:00,00. In this case, the timecode media is recorded using an internal timecode generator.

In the example below, a clip was recorded using VDCP with an offset of 10:00:00,00.

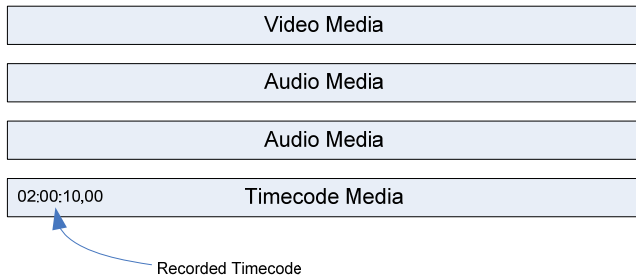


Both the starting timecode and the timecode media start at 10:00:00,00. Again, the timecode media track is recorded using an internal timecode generator that was seeded with the 10:00:00,00 value.

### 2.1 Why a Player's Timecode Output Sometimes Doesn't Match VDCP Time-Sense Values

Consider a clip that was crash recorded using the Player application. The player application allows you to record from a variety of timecode sources. In this example, assume the clip was recorded from a VITC source.

Starting Timecode: 00:00:00,00

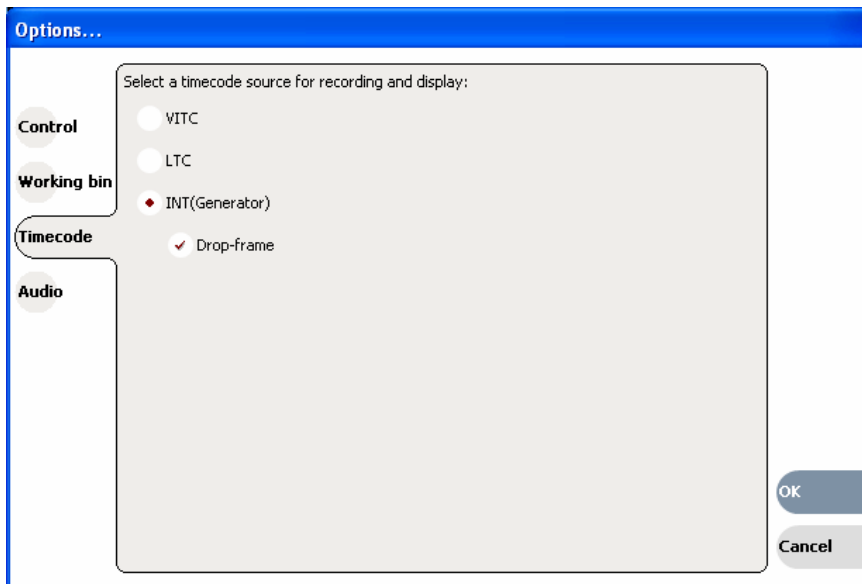


The starting timecode generated when the clip was created is 00:00:00,00, but the recorded timecode media starts with 02:00:10,00. When this clip is played out, the VITC and LTC output values will start from 02:00:10,00. If the VDCP player is using the generated starting timecode, timecode sense values will start from 00:00:00,00.

The K2 Player and MediaMonitor applications show mark in and out using the recorded timecode values, not the generated starting timecode.

### 3 Recording Timecode with VDCP

The VDCP protocol has no control over the timecode mode; therefore K2 provides three timecode options that can be set using the Protocol Recorder GUI. Press the 'Options' button or menu item to open the Options dialog.



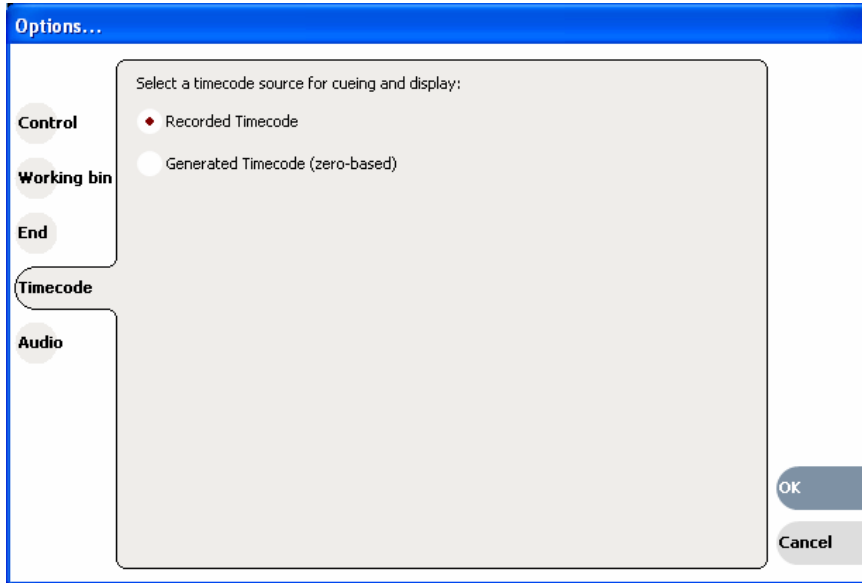
Select "INT" to record clips that have a matching generated and recorded timecode value.

Select "WITC" to record timecode media from a VITC source. In this case, crash recorded clips will have a generated starting timecode of 00:00:00,00.

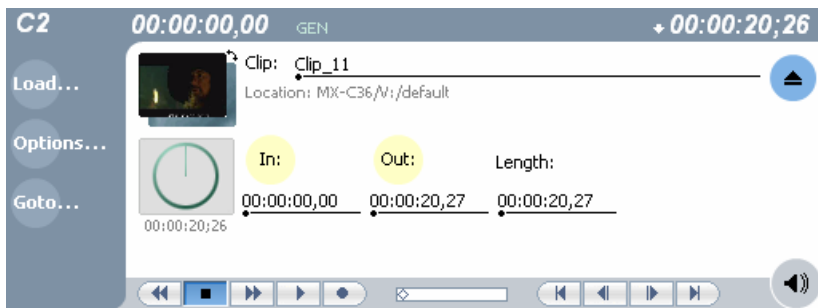
Select "LTC" to record timecode media from a LTC source. In this case, crash recorded clips will have a generated starting timecode of 00:00:00,00.

## 4 Using either the generated or recorded timecode

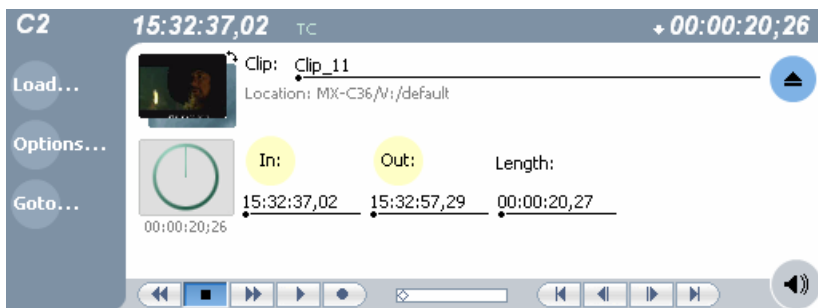
By default, VDCP cues and returns the time sense from the generated timecode values. The K2 Protocol Player application allows you to change this mode so the VDCP listener uses the recorded timecode media track.



When “Generated Timecode” is selected, the ‘GEN’ label is shown next to the timecode display. This timecode value is the clip’s generated starting timecode plus the timeline position. Mark in and out values also reflect the generated timecode.



When a VDCP controller cues playback with data, the K2 uses either the generated or recorded timecode values to mathematically determine the offset into the clip. In the example above, to cue 10 seconds into the clip you would send “00:00:10,00”. In the example below showing the recorded timecode mode, you would send “15:32:47,02”.



When “Recorded Timecode” is selected, the ‘TC’ label is shown next to the timecode display.

## 5 Persistent Timecode Settings

Any change to a channel's timecode options are immediately applied to the channel configuration. This allows K2 to start up with the same values as before.

## 6 Setting the Timecode Mode to match Your Workflow

**You want the VDCP time sense values and cue values to match timecode recorded from a LTC or VITC source:**

Set the Protocol Player's timecode mode to "Recorded Timecode". ID Size Request, timecode sense, and cue operations will then use the timecode media file which reflects the LTC or VITC values that were recorded.

**You want your VDCP player to be able to cue material that was recorded from a variety of sources, not just VDCP.**

Generally for new K2 systems, the best setting is the "Internal" timecode mode for the Protocol Recorder and "Recorded Timecode" for the Protocol Player.

**You have a controller database that has stored SOM values from a previous K2 release.**

Set the Protocol Player's timecode mode to "Generated timecode". This mode provides the best compatibility with controllers that have already been successfully managing clips on a K2 system.

**You want VDCP to work like it did on Profile:**

Set the Protocol recorder's timecode mode to "Internal" and the Protocol Players timecode mode to "Generated Timecode".

**You want to cue using a clip that has striped timecode.**

Striped timecode rewrites the recorded timecode media file. Set the Protocol player's timecode mode to "Recorded Timecode" to cue and display values using the striped media.