Settings for Timecode Chasing for T2 Express/Pro/Elite
April 2015

APPLICATION NOTE

Introduction

With Service Pack 2.0, released in November 2014, any T2 Express/Pro/Elite from Grass Valley, a Belden Brand, has the ability to synchronize its two playback channels using longitudinal timecode (LTC). This is frequently used when integrating video segments into on-stage support, as well as for lighting cues and click tracks. This Application Note explains how to configure T2(s) for timecode chasing.

On-Stage System with Timecode Synchronized

- Avid Pro Tools can be used as a sound controller and timecode controller in a timecode chasing system. T2 (as well as other control equipment) imports a SMPTE timecode from Pro Tools, and plays out content according to the timecode from Pro Tools. As a result, video and other effects can be synchronized with music on stage.

- In addition, T2 has a Timeline Playlist feature with Service Pack 2.0. With this feature, you can place the clips by timecode where you want them by using the Timeline Playlist feature.

- This provides for completely synchronized sound with video and other elements when using these two features.
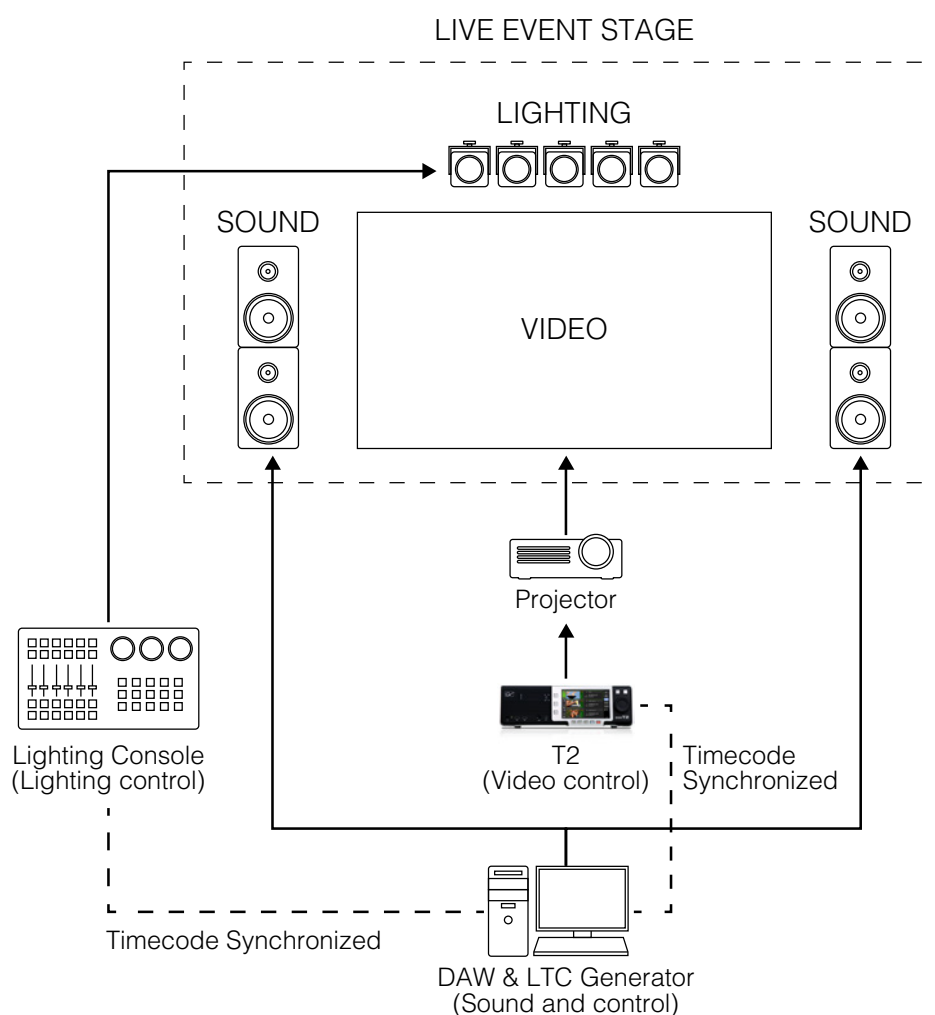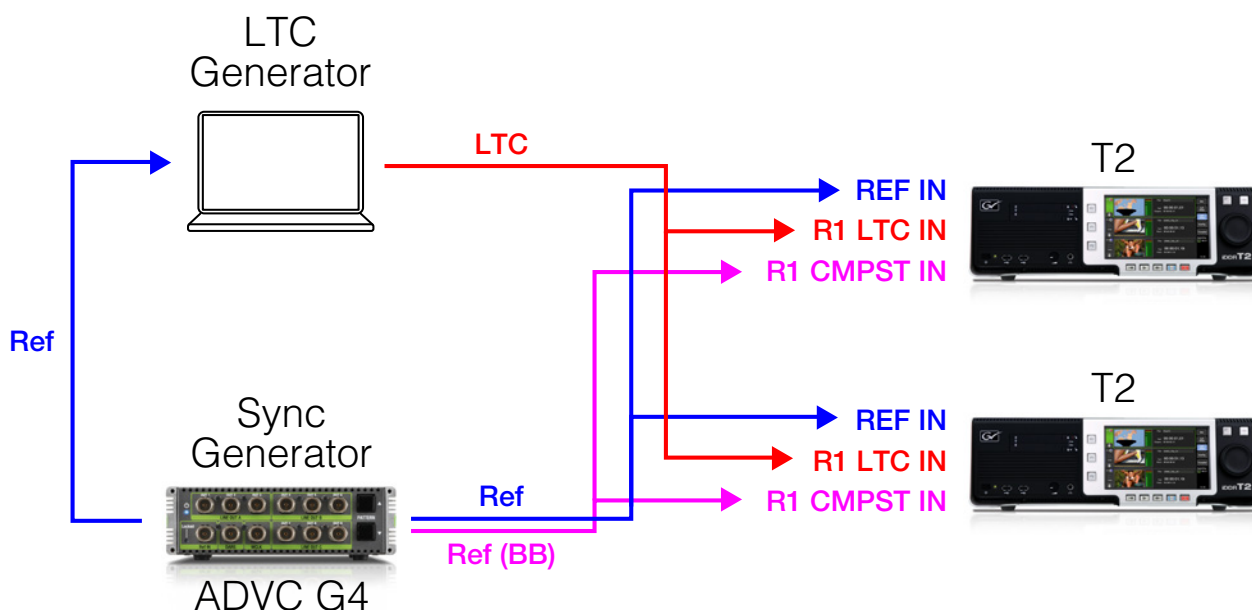
Tools Used

- T2 digital player/recorder (Express, Pro or Elite), Service Pack 2.0 or later

- Sync generator

- LTC generator (such as Pro Tools)

- Video signal generator

System Overview

Schematic of synchronized T2 units, including sound and lighting:

Recommended system requirements are as follows:

- **T2**

  – T2 Elite/Pro/Express (Service Pack 2.0 or later)

  – Timecode chasing requires a reference input, LTC input and a video signal input which is synchronized with the reference input (in the workflow shown, a blackburst reference from a Grass Valley ADVC G4 is used as the video signal)

  – Progressive frames are not supported

- **Sync Generator**

  – Tri-level and blackburst sync

  – Multiple output channels

  – Recommended: Grass Valley ADVC G4

- **LTC Generator**

  – SMPTE timecode support

 – The P1 or P2 LTC output from T2 can also be used as an LTC generator

T2 Settings

- The following procedure uses Workstation mode

- These settings should be applied to ALL synchronized T2 channels

- These settings should be applied after connecting all of the equipment

1) Set Reference Source

Select [Config] > [General] > [Hardware] tabs and select [External] from the Reference drop-down list. Then select [Apply]. If the T2 receives a reference signal from the sync generator, the display should be changed as follows:

- Reference: [SIGNAL OK] is green

- P1 (or P2): [SYNC OK] is green
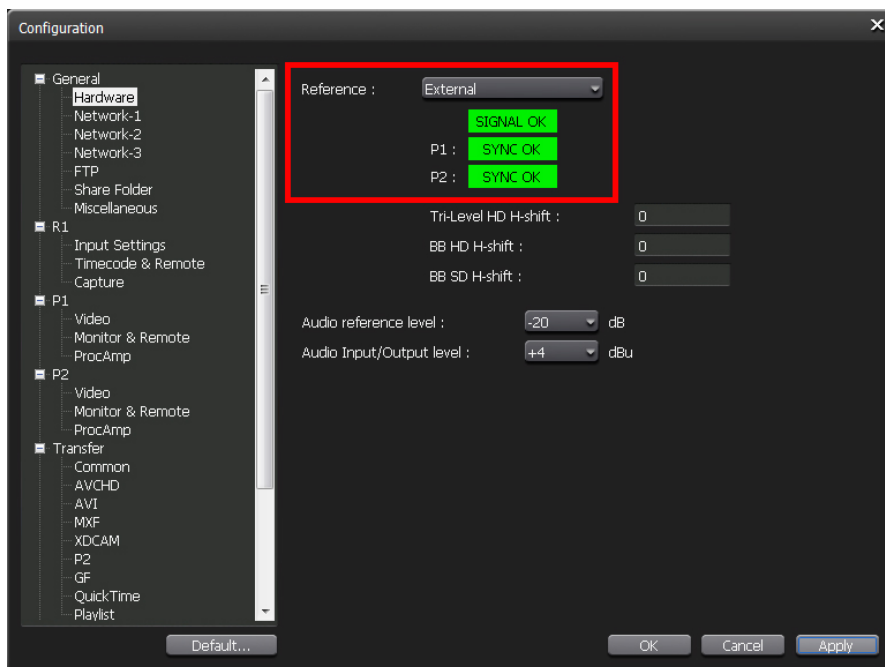
2) Set Input Video Format (R1)

Select [Config] > [R1] > [Input Settings] tabs and select your input video format from the Format drop-down list. Then select [Apply].

A composite analog blackburst signal is used as the video signal input for the purposes of this Application Note, so select [Composite] for Input type and [720x486 59.94i] for Input format, as shown at right:
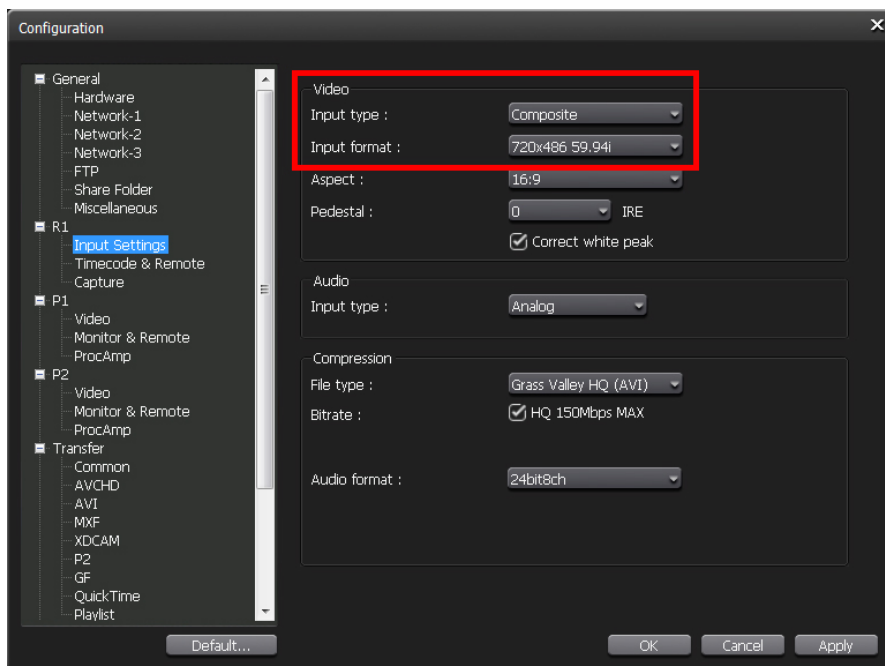
**3) Set Output Video Format (P1/P2)**

Select [Config] > [P1 or P2] > [Output Settings] tab and choose the output video format from the Format drop-down list. The output video format frame rate should be the same as the input video frame rate. Then select [Apply].

A 1920x1080 59.94i signal is used as the video signal output for the purposes of this Application Note. So select [1920x1080 59.94i] for output format, as shown at right.
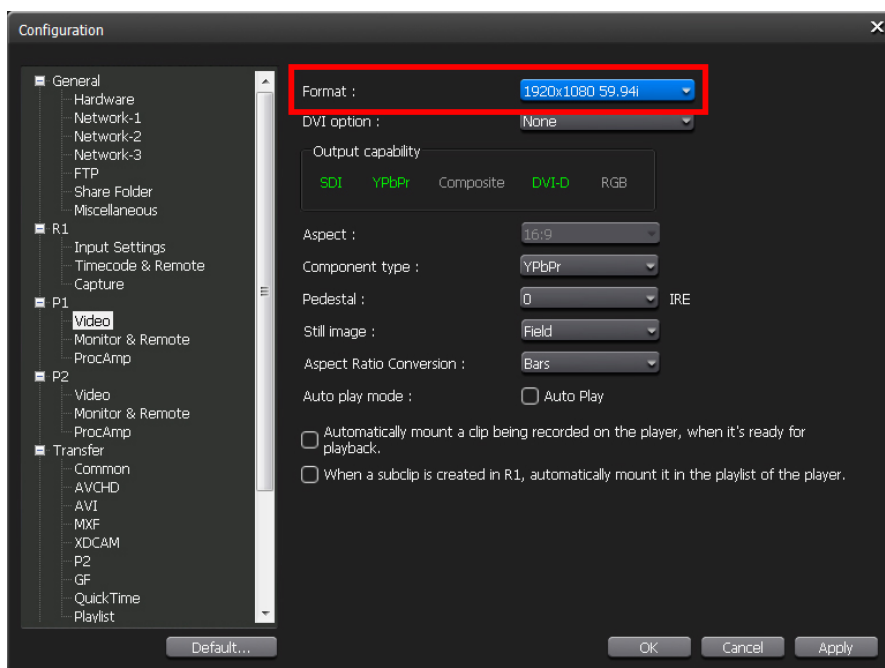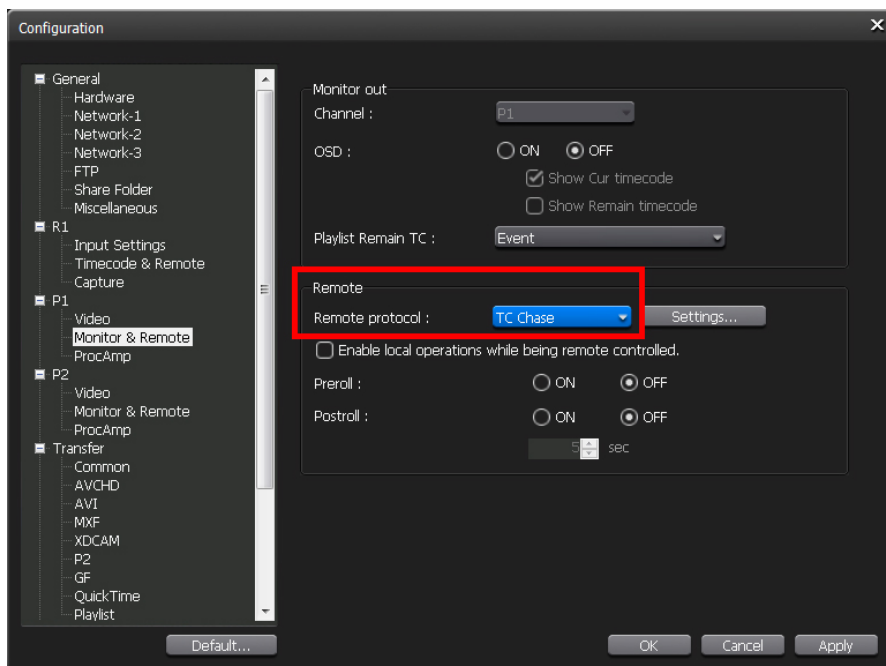

4) Set for Remote Setting

Select [Config] > [Miscellaneous] > [Remote] tabs and select [Yes (Sync Multiple T2s)] from the Remote (GPI/RS-422) Start/Stop Delay drop-down list. Then select [Apply].
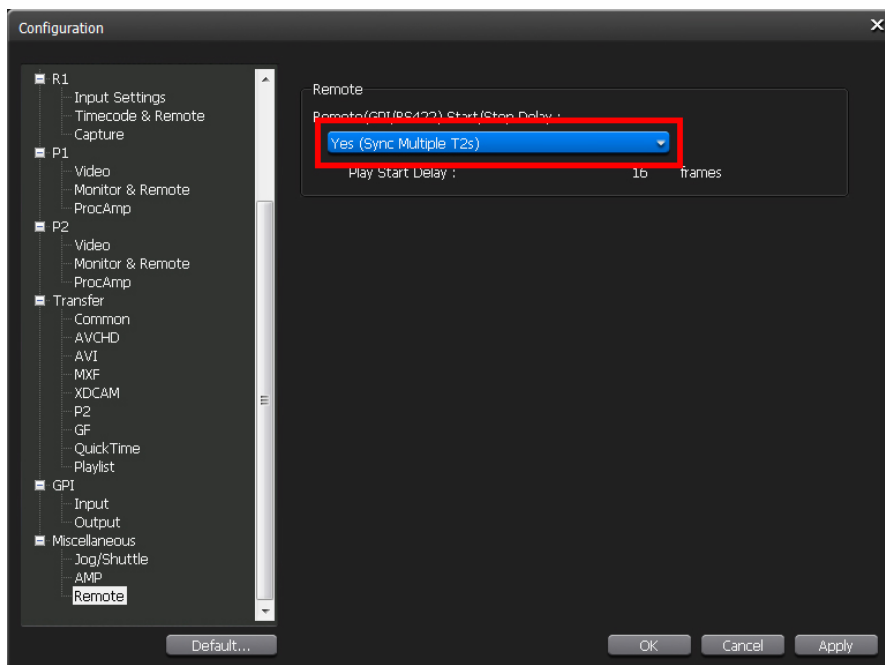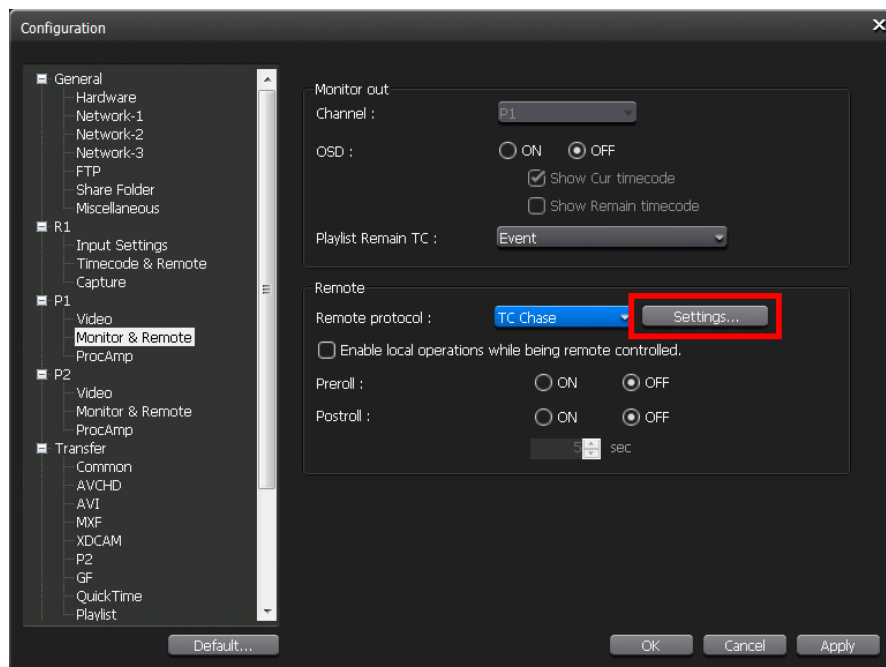
5) Set Remote Protocol (P1/P2)

Select [Config] > [P1 or P2] > [Monitor & Remote] tabs and select [TC Chase] from the Remote Protocol drop-down list. Then select [Apply].

6) Settings for Timecode Chasing (P1/P2)

Click on the [Settings] button in the [Monitor & Remote] tab, and the dialog box [TC Chase] will appear.


When the input LTC is lost:

This is the P1 (or P2) playback setting in the event of the LTC input signal being lost:

– [Continue playback] (default): Playback continues when LTC input is lost.

– [Stop playback]: Playback stops when the LTC input is lost.

Offset:

This is the offset setting for R1 LTC timecode input.

– [Off] (default): Does not apply offset to R1 LTC timecode input

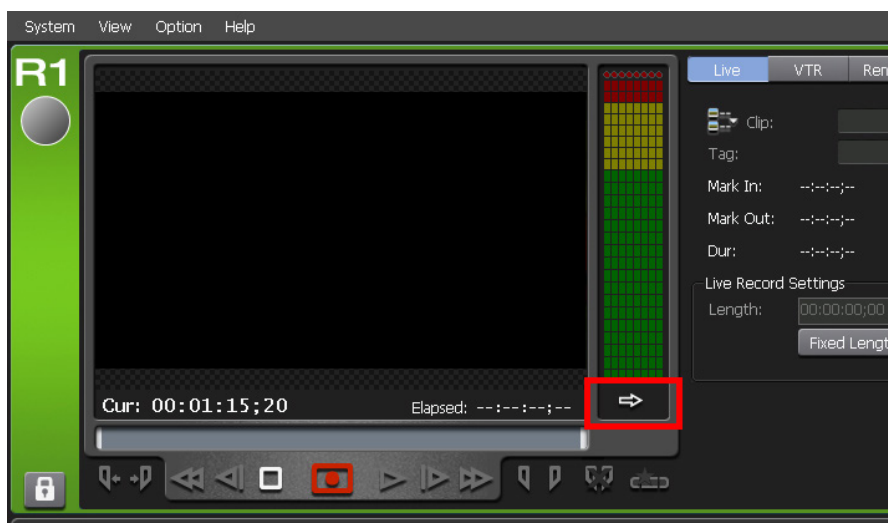– [On]: Set offset to R1 LTC timecode input between +15 to -15 frames
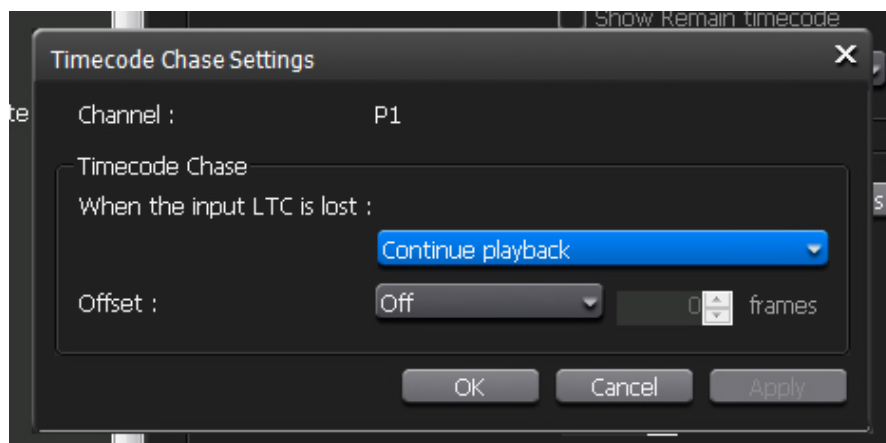
Confirm Input Timecode (LTC) into T2

1) Confirm the Timecode Status

Click the right arrow under the audio level meter in the R1 Channel View.

Note: You can also select it on the P1/P2 Channel View.

Click [<] or [>], and the Timecode Status will be displayed. When the timecode from the LTC input is recognized correctly by the T2, the timecode in Timecode Status is green. If the timcode is NOT recognized, the timecode text is white or displays as [--:--:--;--].
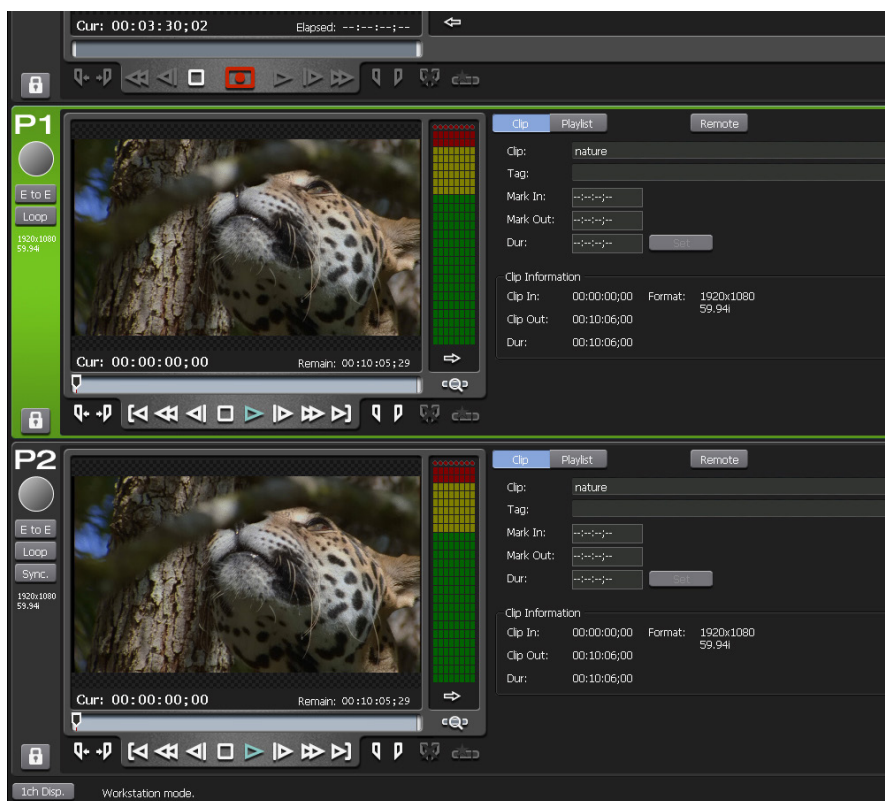
This can happen, for example, when the LTC generator plays back 1080/50i clips as 1080/60i. If you observe white timecode text or the [--:--:--;--] display, please check the LTC generator and T2 settings.
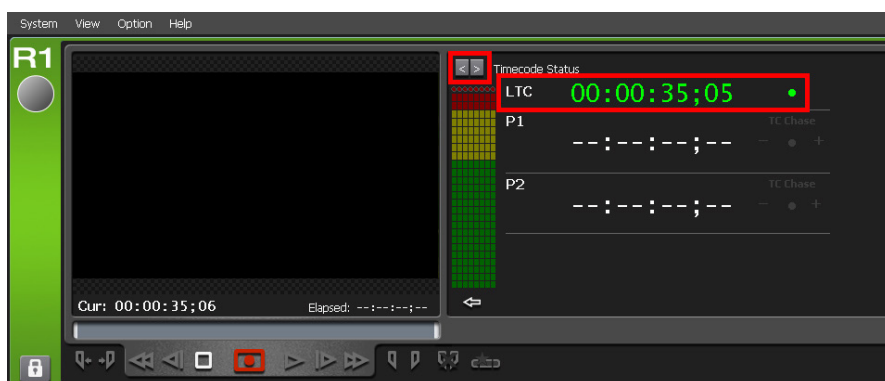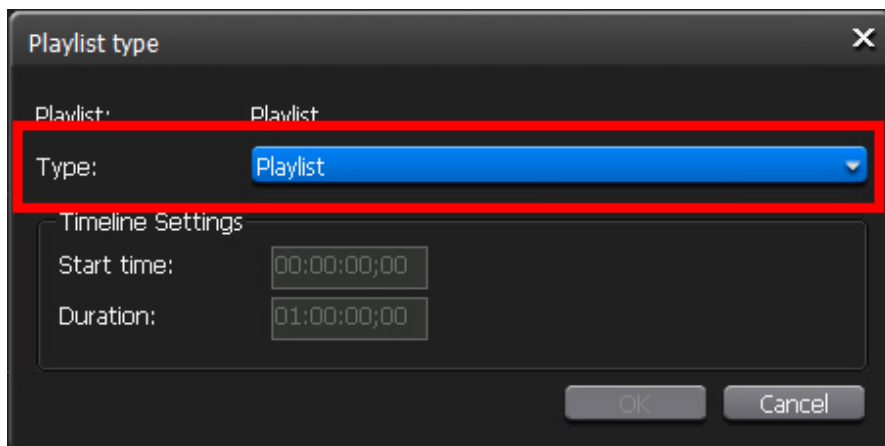
Playback with Timecode Chasing

1) Load clip or playlist to P1 (or P2)

Important note: The timecode of the clip(s) loaded into P1 should not exceed the duration of the timecode on R1.

Using [Timeline Playlist] — another new feature of Service Pack 2.0 — it is easy to schedule multiple clips to start at specific timecode points. In [Timeline Playlist], you can specify an exact timecode point to place each clip. Any gaps between the end of one clip in the playlist and the timecode start of another clip in the playlist are automatically filled with black.

To set [Timeline Playlist], right-click on [Playlist] in the Bin and select [Properties]. Then Click [Change] in the [Playlist Info] tab and select [Playlist] from the drop-down list in [Type].

2) Activate Timecode Chasing

To start timecode chasing, click the [Remote] button in the P1 (or P2) channel view. The P1 (or P2) video is cued up with the LTC timecode and played back at its designated incoming timecode trigger point. When the P1 (or P2) output is playing in sync-lock with the R1 LTC timecode input, the P1 (or P2) timecode text in Timecode Status shows green. If the output channel is not playing back in sync-lock, the timecode text is white.
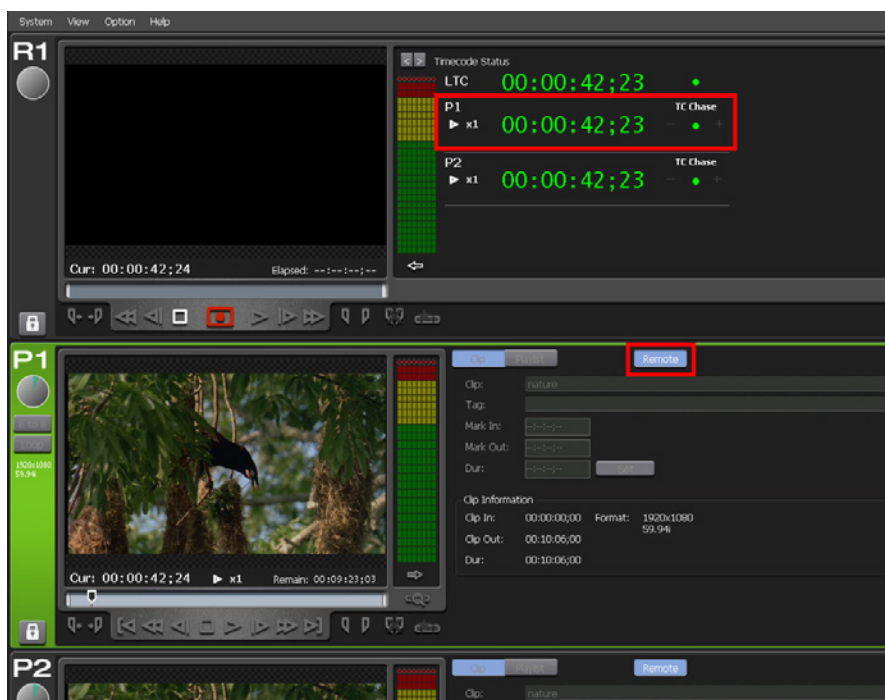
If you use an offset in [Timecode Chase] settings, the offset frame appears in the [Timecode Status] of P1 (or P2).
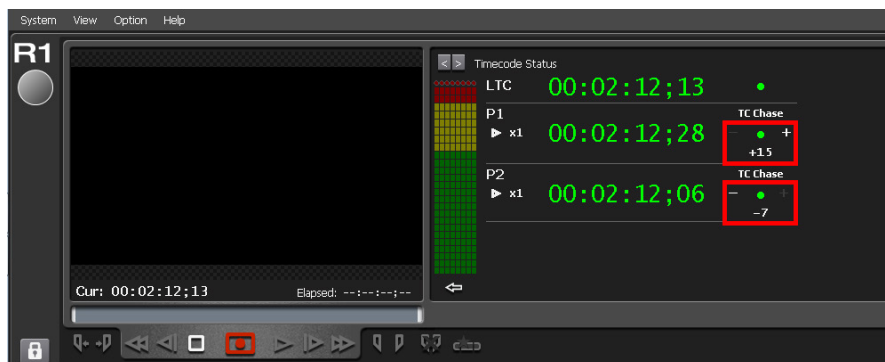
TIP: Chasing R1 LTC Timecode Manually

If P1 or P2 is delayed from R1 LTC timecode, the playback channel can chase the R1 LTC timecode in a manual operation. When playback timecode is delayed from R1 LTC timecode, the frame delay of P1 or P2 appears in the Timecode Status.

Manually play P1 or P2 using the [Play] icon and change to VAR mode. Chase R1 LTC timecode by VAR mode while monitoring the frame offset display in Timecode Status.

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