Integrating Dolby Atmos into CLIPSTER

Supplement for the CLIPSTER Software

CLIPSTER®

DOLBY ATMOS

ROHDE & SCHWARZ

Supplement for the CLIPSTER user guide: "Integrating Dolby Atmos into CLIPSTER"
Document Version 1.0

Integrating Dolby Atmos into CLIPSTER

This document describes the implementation of the Dolby Atmos feature when using a CLIPSTER or a Fuze system. The integration of the Dolby Atmos feature allows you to create digital content which also adheres to the specifications of the Digital Cinema Initiative (DCI).

For further information on the specifications and how to work with it in the CLIPSTER software, see the "CLIPSTER DCI Mastering Supplement User Guide".

The Dolby Atmos feature is available by default on a CLIPSTER only with the DCI option. Otherwise, the DCI option must be additionally purchased. On Fuze systems, Dolby Atmos is available only within the DCI option which is an optional feature. Depending on the hardware of the CLIPSTER or Fuze system delivered to you, an upgrade from an older version may not be possible.

This document covers the following topics:

- Understanding Dolby Atmos (page 1-2)
- Dolby Atmos within the CLIPSTER Context (page 1-3)
- Integrating Dolby Atmos (page 1-8)

Understanding Dolby Atmos

Dolby Atmos offers a new cinema sound processing, featuring a flexible rendering engine that optimizes the audio quality. Surround effects of the movie soundtrack are distributed to the loudspeaker layout while considering the characteristics of each room.

Figure 1-1: Dolby Atmos sound distribution in movie theaters

Dolby Atmos enhances the audio experience by the following features:

- Overhead sound
- Improved audio quality and timber matching
- Greater spatial control and resolution

The audio package consists of several audio tracks and metadata which have been mixed and brought together in a Dolby Atmos package. Those files are packaged using industry-standard MXF wrapping techniques to minimize the risk of changes, and delivered to the DCP creator.

Figure 1-2: Dolby Atmos integration workflow

Dolby Atmos within the CLIPSTER Context

The user can select pre-mastered Dolby Atmos files and add them to the timeline like any other audio file. CLIPSTER supports several arrangements in the timeline:
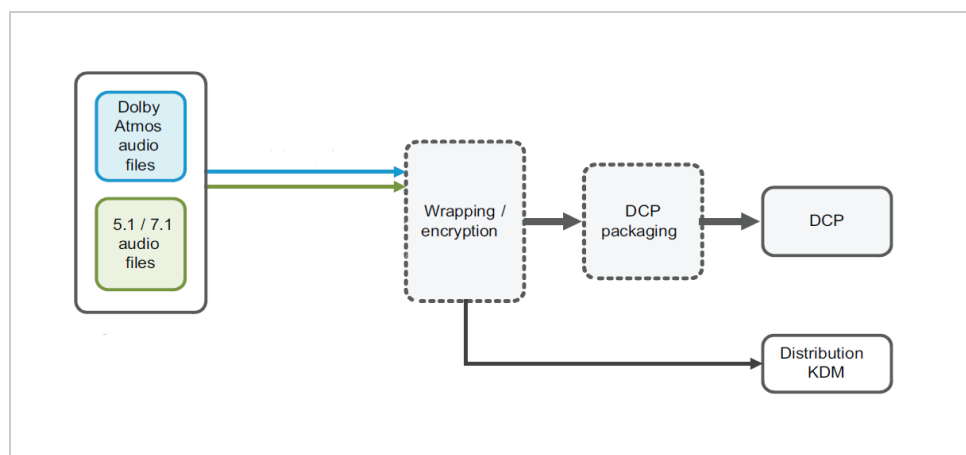
- One Dolby Atmos file for every reel
- One Dolby Atmos file for several reels
- Several Dolby Atmos files for one reel
- No Dolby Atmos file in the reel

Dolby Atmos timeline elements are DVS-blue. Dolby Atmos bin clip icons are black with a DVS-blue text „Dolby Atmos".

NOTICE It is not possible to play or edit the Dolby Atmos file in any way within CLIPSTER. Thus, the software cannot detect all possible invalid or incompatible combinations of properties. It is the user's responsibility to create a valid Dolby Atmos stream, should he add more than one Dolby Atmos element to a reel.

There are some constraints regarding the use of Dolby Atmos in CLIPSTER. During the DCP creation, CLIPSTER automatically performs a consistency check and issues an error message if any of the constraints has been violated.

Synchronization Constraints

The synchronization signal is created at the time the main audio track file is created and embedded into channel 14. The main audio track file is always frame-wrapped at a frame rate that matches the video frame rate.

CLIPSTER automatically allocates the sync signal on audio channel 14 (starting with channel 1), as soon as the Dolby Atmos option is enabled, see „Generating the DCP with Dolby Atmos"on page 1-8.
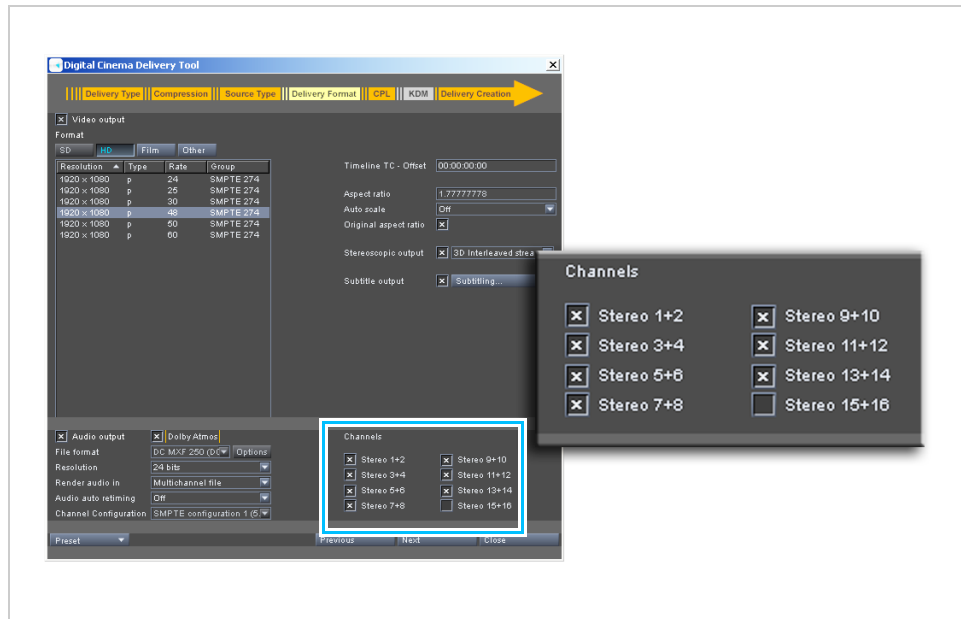

Figure 1-3: Allocation of audio channels with Dolby Atmos

Note that the synchronization signal is not linked to the video track or the Dolby Atmos track. This allows the same main audio track to be used with different Dolby Atmos tracks, though such an occurrence would be unusual. It also allows, for instance, a single main audio track to be referenced by several reels while each reel references a different Dolby Atmos track, or vice versa. As long as the sync signal is created at the time the main audio track is wrapped into MXF, it will be a valid signal.

Editing Constraints

The Dolby Atmos file cannot be edited like an usual audio file. However, it may be sliced into various parts e.g. for the different reels (hard cut editing). In such cases, it is not allowed to overlap several Dolby Atmos files. It is also not possible to leave empty spaces between two Dolby Atmos files in the timeline:
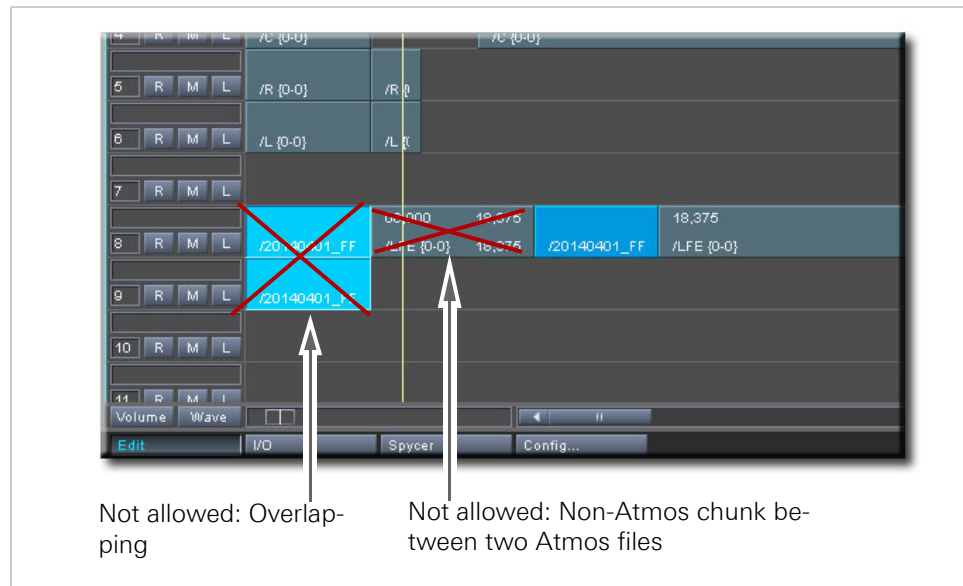

Not allowed: Overlapping

Not allowed: Non-Atmos chunk between two Atmos files

Figure 1-4: Not allowed elements

DCP Creation Constraints

All compositions carrying a Dolby Atmos track must comply with the SMPTE packaging format as defined by SMPTE 429-2. This format is to be set in the Digital Cinema Delivery Tool, see „Generating the DCP with Dolby Atmos"on page 1-8.
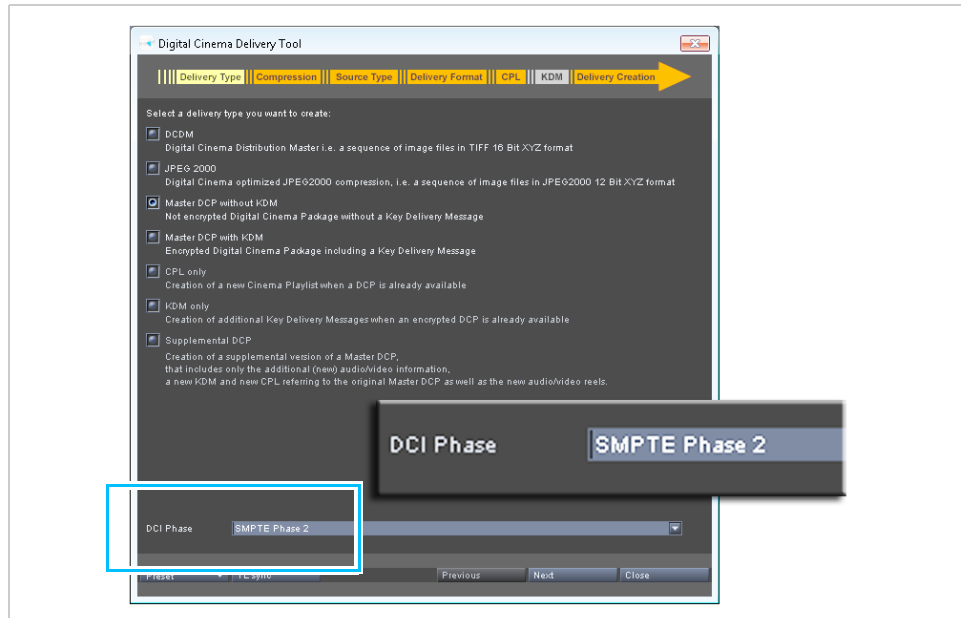

Figure 1-5: Digital Cinema Delivery Tool: selecting SMPTE standard

Constraints summary

The following table gives an overview of all the constraints when integrating Dolby Atmos files in CLIPSTER.

Table 1-1: Dolby Atmos constraints summary

Constraint subject	Constraint
Packaging format	All compositions carrying a Dolby Atmos track must comply with the SMPTE packaging format as defined by SMPTE 429-2.
Reels	All reels that contain a Dolby Atmos track must also contain a main audio track.
	All reels within an Atmos composition must have the same number of tracks. If there are reels with no Dolby Atmos audio track, the main audio track must have the same number of channels as the main audio tracks in the reels that do have a Dolby Atmos track.
Main audio track	All main audio tracks that are placed in an Atmos reel must contain an Atmos synchronization signal on channel 14.
	The synchronization signal shall comply with Dolby specification: „Digital Cinema Auxiliary Data Synchronization Signal". The main audio track file shall carry a 'ChannelAssignment' label indicating Configuration 4 (per SMPTE 429-2).
KDM generation	KDMs created for a composition with Dolby Atmos shall have the audio watermarking turned off on channel 14 in order to preserve the sync track. CLIPSTER automatically takes care for that.

Integrating Dolby Atmos

The following work instructions guide you through the process of adding a Dolby Atmos file and creating a DCP including the Dolby Atmos package.

The following topics are covered:

- Adding a Dolby Atmos file into CLIPSTER
- Generating the DCP with Dolby Atmos

Adding a Dolby Atmos file into CLIPSTER

Requirements:

- A video file is already loaded.
- An associated Dolby Atmos package is available.
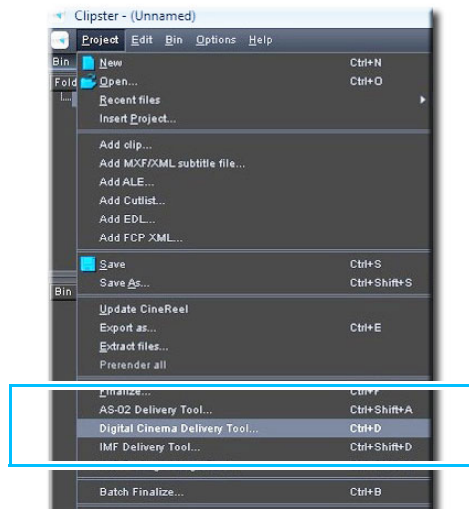
Perform the following work steps:

1. Add the associated Dolby Atmos file in the bin.
2. Drag and drop the Dolby Atmos file into the timeline to create the main audio track.
3. Process the production until completion. Consider „Editing Constraints" on page 1-5.

Generating the DCP with Dolby Atmos

After the production is completed, it can be packaged into a DCP with Dolby Atmos integration.

Perform the following work steps:

1. Start the DCP generation by clicking on **Project > Digital Cinema Delivery Tool...** on the menu bar or use the keyboard shortcut **[Ctrl.+D].**
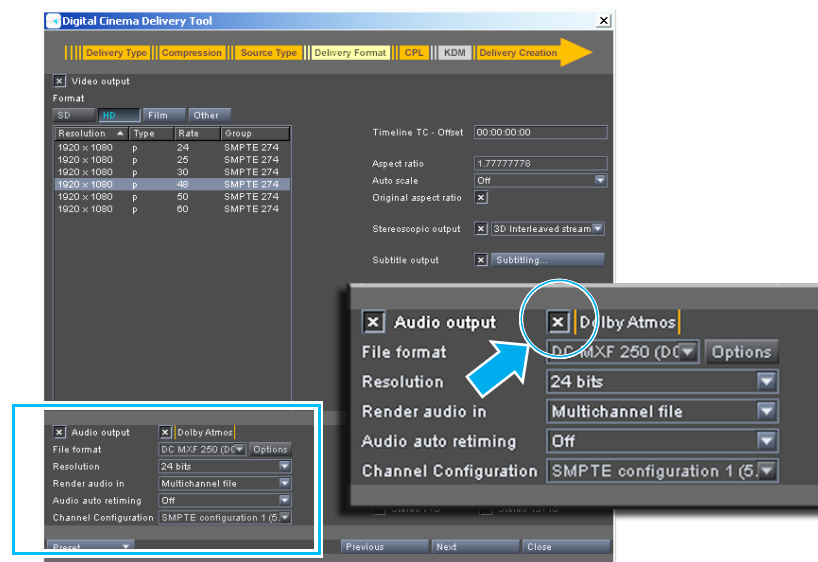
▸ The DCP delivery tool opens.

2. In section **Delivery Type** select *SMPTE Phase 2* as preferred DCI phase.

3. Proceed with the Wizard until section **Delivery Format**. Activate the Dolby Atmos check box:

▸ Audio channels 1 - 14 are automatically allocated.

4. Proceed with the Wizard until completion.

The DCP is now generated with Dolby Atmos integration.