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DIGITAL CINEMA

DIGITAL CINEMA SERVER Model SMS-2K-1

Operation Manual

Version 1.0

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Table of Contents

1	INTRO	DDUCTION	.6
	1.2 P	URPOSE RESENTATION OFTWARE VERSION	.6
2	INGE	STING CONTENT	.7
		REPARATION PHASE – USB DRIVE NGEST PHASE Item Types Ingesting Package Validation	.7 .7 .8
3	SHOV	VS MANAGEMENT	9
	3.2 S 3.2.1 3.2.2 3.2.3 3.3 S 3.3.1 3.3.2 3.3.3 3.3.4	CINELISTER USER INTERFACE	11 18 18 18 20 22 23 23 23 23
4	PLAY	2D CONTENT IN 3D MODE2	25
		48FPS_PLAYBACK" MACRO ADDITION	
5	ACRC	DNYMS2	27



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1 Introduction

1.1 Purpose

The purpose of this document is to provide guidance on how to operate the Digital Cinema Server.

It explains how to ingest content from a USB drive and how to manage shows and automation events to successfully operate and configure the Digital Cinema Server.

1.2 Presentation

This document is structured according to the following sections:

- Section 1: Introduction Overall presentation of the document
- Section 2: Ingesting Content Instructions on how to ingest content from a USB drive
- Section 3: Shows Management Description of the CineLister interface for proper Show management
- Section 4: Play 2D Content in 3D Mode Usage of a specific Macro Cue to playback 3D shows containing mixed 2D and 3D content
- Section 5: Acronyms

1.3 Software Version

This document complies with the Digital Cinema Server software version number 0.5.2-26 or later.



2 Ingesting Content

This section provides instructions on how to ingest content from a USB drive into the Digital Cinema Server server.

2.1 Preparation Phase – USB Drive

If the content to ingest is on a USB drive, then plug the drive into the Digital Cinema Server and wait for the Ingest window to appear on-screen. An example of this window is shown here:

	Select a PackingList or a KDM to copy:		Local ingest 👻
	Vest_Content_1		🔒 Ingest
	Test_Content_1		
	Test_Content_2		🔀 <u>C</u> lose
	Test_Content_2		
Group of audio-	Test_Content_4		61%
visual content	Test_Content_6		free space: 352 GB
	SMulti_Compositions_Package		
Individual ———	Test_Content_6		Ctrl
Composition being	- Test_Content_5		
part of the group of audio-visual	Test_Content_4		
	- Test_Content_3		
	🔗dcp2000_patch-0.5.2-18.pkg	•	

Figure 1: Ingest Graphical User Interface (GUI)

2.2 Ingest Phase

2.2.1 Item Types

Different types of content can be displayed in the Ingest window presented above. Audio-visual content (e.g. features, trailers, etc.) is identified with the reel icon (or with the "Speaker and Film" icon) whereas KDMs (containing the required decryption keys allowing playback of the corresponding CPLs) are identified with a lock icon.



Figure 2: Reel Icon

Ì

Figure 3: "Speaker and Film" Icon



Figure) 4:	Lock	lcon
--------	-----------------	------	------

An audio-visual item may correspond to a group of Compositions – see **Figure 1**. Then, clicking on the selected audio-visual item should make the contained Compositions visible as presented in **Figure 1** above.



If an item was already ingested, its name will appear in gray as illustrated on Figure 5.



Figure 5: Ingest GUI – Ingested Item

2.2.2 Ingesting

In order to ingest an item into the Digital Cinema Server, select an item by clicking on it. The selected line will then be reverse highlighted in the Ingest window.

After having selected an item to ingest, click on the "Ingest" button at the top right corner of the graphical user interface. The ingest process will then start.

Note: You can also select multiple items by clicking the "Ctrl" button on the right side of the Ingest GUI and then clicking on multiple items to ingest. When pressing on the "Ingest" button, all the selected items will then be ingested.

2.2.3 Package Validation

After the file loading is complete, the server scans and validates the cinema package. The Hard Disk Drive (HDD) access LED on the Digital Cinema Server front panel will remain lit until the validation process is finished. This may take between a few seconds (for KDMs, software updates, etc.) and up to 20 minutes for a full movie. At the end of this process, the content will be available on the server.



3 Show Management

Show management in the Digital Cinema Server is done using the CineLister software.

CineLister is based on a graphical user interface (GUI) that allows creation, editing and playback of a Show Playlist (SPL). It also provides for the scheduling of several Show Playlists playbacks in advance in order to be played automatically at scheduled times.

3.1 CineLister User Interface

To run CineLister, click the CineLister button on the main menu screen of the Digital Cinema Server.



Figure 6: Main Menu Screen - CineLister



The "Editor" tab of the graphical user interface should appear on the screen. It is presented below:



Figure 7: CineLister Graphical User Interface (GUI) – "Editor" Tab

The "Editor" tab presented above is composed of two different parts:

- the left pane displays all of the content that is available on the server (e.g. features, trailers, advertisements) together with any existing automation and trigger cues.
- the right pane is used to display the content of a given Show Playlist, as presented in section **3.2**.

The "Quit" button is used to close the CineLister user interface. Other tabs – "Playback" and "Schedule" are available. Their usage is explained in sections **3.3** and **3.4**.



3.2 Show Playlist

A Show Playlist defines a succession of Compositions and/or events associated with Automation Cues and/or Trigger Cues. It provides the events chain to be taken into account for the playback of a Show. Using CineLister, a new Show Playlist can be created or an existing Show Playlist can be opened in order to be edited and/or played as presented in the following paragraphs.

3.2.1 Show Playlist Creation

3.2.1.1 Principle

The CineLister user interface allows the user to create their own Show Playlist from the elements listed in the left pane of the interface. To add an element to the Show Playlist, select it – the element will be reverse highlighted – and click on the "Add to Show Playlist" button.

This element will appear in the right pane. Repeating this operation with all the required elements will lead to the creation of what is called a "Show Playlist", as presented below:



Figure 8: Show Playlist Creation

If an element needs to be removed from the Show Playlist, select it in the "Show Playlist" window and click on the "Remove" button.



3.2.1.2 Element Types

Different types of elements are available:

- Audio-visual content (e.g. features, test content, trailers, etc.)
- Automation cues (Macro automation events)
- Trigger cues

Consult your field installer to know how to add automation and trigger cues.

3.2.1.2.1 Audio-Visual Content

When an audio-visual content is encrypted, an icon is displayed at the beginning of its line.

- If a red stop is associated to a lock icon see example below it means that the required KDM is not available. Thus, the content can't be played.
- If a green mark is associated to a lock icon see example below it means that a valid KDM is available for that content. Then, this content can be played.
- If an orange warning is displayed with a timer icon see example below it means that the required KDM is present and will expire in less than 48 hours. You are warned that you will not be able to play the content anymore after expiration of the KDM, unless you ask for a new KDM.



Figure 9: KDM Availability

<u>Note</u>: See paragraph **3.2.1.5** on accessing the information of KDM(s) associated with a Composition (CPL) – e.g. exact expiration date.

To delete a Composition (e.g. feature, trailer) from the server, select it on the left part of the "Editor" tab and click on the "Delete content" button – see **Figure 9**. For security purposes, you will be asked for a password to complete this operation.



3.2.1.2.2 Automation Cues

Macro Automation Cues can be added to an element of the Show Playlist. Select the element in the right part of the GUI and select the appropriate Automation Cue on the left part of the GUI.

Then click on "Add to Show Playlist" button.

You will be asked to define the offset of this automation cue (from the beginning or the end of the chosen element) using the following window:

Offset indicating the	The automation cue will be attached to the element time of Black 00:00:02	ode: Name of the element concerned by this Macro Automation Cue
Macro Automation Cue within the element	Offset	
	 from the begin of the clip from the end of the clip 	▲ ▼
	<u>O</u> k <u>C</u> anc	el

Figure 10: Automation Cue Offset Definition

Hit "Ok" when you are done.

The Macro Automation Cue will appear under the Elements pane in the right part of the GUI as presented below:

Add to Show Playlist		
Elements automation cues a) J_FLAT_1920 J_FLAT_1920 J_FLAT_1998 J_SCOPE_1920 J_SCOPE_2048 48FPS MODE CREDIT DCI_XYZ_FLAT DCI_XYZ_FLAT DCI_XYZ_SCOPE END FEATURE MPEG_FLAT P3 MPEG_SCOPE P3 Pause Play Preshow Timeout Reset Playlist START_FLAT START_SCOPE Feature feature	Start Time Elements on "Ext Start" do "DCI_XYZ_FLAT" 00:00:00 Black 00:00:00 START_FLAT 00:00:55 NatGeo Lions 00:02:35 Serenity Full Movie with Sp. Subtitles 00:02:35 DCI_XYZ_FLAT 02:01:30 Black 00:02:32 END	Lutomatior Cue added

Figure 11: Automation Cue added to an Element

You can repeat this operation for the same element of the Show Playlist or for another element of the Show Playlist.



3.2.1.2.3 Trigger Cue

A Trigger Cue allows for the execution of a Macro Automation Cue when the underlying condition – connected to the Trigger Cue when it was created using Macro Editor – occurs.

For example, if a Trigger Cue is based on the condition "Wait for GPI #1 ON", you can link a specific Macro Automation Cue as presented above in order to be executed when GPI #1 is ON.

You have the choice to program Trigger Cues to be available during the whole Show Playlist or only during a specific Show Playlist element.

• Trigger Cue for the whole Show Playlist

To define a Trigger Cue for the whole Show Playlist, select a Trigger Cue on the left part of the GUI and hit "Add to Show Playlist". The following window will appear:

	Select an automation cue to execute on	trigger:
	Recover E	nable
"automation cues" window containing the list of available Macro Automation Cues	automation cues 3D_FLAT_1920 3D_FLAT_1998 3D_SCOPE_1920 3D_SCOPE_2048	
Line to check to make the Trigger Cue available during the whole Show Playlist	48FPS MODE Scope • the trigger is available for all elemen • the trigger is only available for the element Black	
		<u>Ok</u> <u>C</u> ancel

Figure 12: Trigger Cue Addition

Select the Macro Automation Cue to associate to this Trigger Cue by clicking on it in the "Automation Cues" window. The default scope of the Trigger Cue is "all elements of the Show Playlist", so you just need to hit "OK".

• Trigger Cue for only one Element of the Show Playlist

To create a Trigger Cue that will be available only during one specific element of the Show Playlist, select the element in the Show Playlist and then select the Trigger Cue that you want to add in the left window pane of the GUI. Click on "Add to Show Playlist" and the same window as presented in **Figure 12** will then be displayed.

Associate a Macro Automation Cue using the same process as presented above – see **Figure 12** - and check the line "the trigger is only available for the element". The line below should contain the name of the element you selected just before starting to add the Trigger Cue – the only element during which this Trigger Cue will be available.







3.2.1.3 Elements Reordering

Two arrows allow the user to change the order of the elements into the Show Playlist. They are presented below:





Figure 13: Arrow Pointing to the Top Figure 14: Arrow Pointing to the Bottom

Using these arrows, each element can be moved to the top or to the bottom of the Show Playlist:

- To move an element to the top of the Show Playlist, select it and click on the arrow pointing to the top see **Figure 8**.
- To move an element to the bottom, select it and click on the arrow pointing to the bottom see **Figure 8**.

Repeat these steps until the required elements order is obtained.

3.2.1.4 Refresh Button

A "Refresh" button is available. When a new package has been ingested into the server, it will not be displayed automatically in the CineLister interface if it was already running. Click on the "Refresh" button at the top left in order to update the Elements pane and display the newly ingested content.



Figure 15: Refresh Button



3.2.1.5 Edit Button

You can edit the elements of the Show Playlist by selecting one of them on the right part of the interface – it will be reverse highlighted - and clicking the "Edit" button presented in **Figure 15**.

In the case of a Trigger Cue or Automation Cue, you will be able to edit the properties you were asked to set when the event was added to the Show Playlist.

In the case of a Composition (an audio-visual element), a window showing the detail of this element will be displayed as presented below:

	UUID Content Title Content Kind Duration				
Picture information	Picture Encoding Rate	JP2K (24 1	2048×1080)		
Sound information	Sound Channels Quantization	6 24 bit	S		
(Begin		End	Status	UUII
KDM(s) information {			2008-03-29 00:00:00	available	391:
	•			(••
	9			<u>o</u> l	<

Figure 16: Edit Window Example with KDM Valid for more than 48 Hours

If a KDM for the selected Composition is available for less than 48 hours, its remaining validity time will be displayed in the "Status" column and displayed in orange as presented below:

	UUID Content Title Content Kind Duration Picture Encoding Rate	The V featu 01:47			
	Sound Channels Quantization KDM available	6 24 b	its		"Status" column
	Begin		End	Status L	
KDM valid for only 7 hours	2008-03-06 2	3:00:00	2008-03-11 00:00:00	1 7 hours left e	

Figure 17: Edit Window Example with KDM Valid for less than 48 Hours



3.2.1.6 Show Playlist Saving

After a Show Playlist has been created, according to the procedure presented above, it can be saved using the "Save" button. Click on it to save the Show Playlist.

"New" button	"Save" button	
	New Open Save Cleanup	Quit
	◆ ▲dd to Show Playlist	
EI	ilements	Start Time Elements
0	automation cues	on "Ext Start" do "DCI_XYZ_FLAT"
30	D_FLAT_1920	00:00:00 Black
	D_FLAT_1998	00:00:00 START_FLAT
	D_SCOPE_1920	00:00:01 Destino Hollywood
	D_SCOPE_2048 8FPS MODE	00:00:55 NatGeo Lions
	REDIT	00:02:35 Serenity Full Movie with Sp. Subtitles
	CI XYZ FLAT	02:01:30 Black
	CI XYZ SCOPE	Such Black
EN		
FE	EATURE	
	PEG_FLAT P3	
20/52	PEG_SCOPE P3	
	ause	
Pla	ay reshow Timeout	
	eset Playlist	
327	TART FLAT	
	TART_SCOPE	
Ed	ditor Playback Schedule	

Figure 18: Show Playlist Saving

3.2.1.7 New Show Playlist

If a new Show Playlist needs to be created, click on the "New" button – see **Figure 18**. It will remove the current Show Playlist present in the right pane of the user interface.

<u>Note</u>: Make sure that the current Show Playlist was saved before clicking on the "New" button, otherwise it will be lost.



3.2.2 Show Playlist Opening

If a Show Playlist already exists, it can be opened using the "Open" button. This Show Playlist will be displayed in the right part of the user interface as if it was created according to the procedure presented above.

"Open" button		"Cleanup" button
New 🚰 Open 🔳 Save 🗙 Clea	anup	Quit
Add to Show Playlist		🛃 🐓 🕵
Elements		Start Time Elements
🕘 automation cues 3D FLAT 1920		
3D FLAT 1998		
3D SCOPE 1920		
3D_SCOPE_2048	100	
48FPS MODE	100	
CREDIT		
DCI_XYZ_FLAT		
DCI_XYZ_SCOPE		
END		
FEATURE NOT A DATA		
MPEG_FLAT P3 MPEG_SCOPE P3		
Pause		
Play		
Preshow Timeout		
Reset Playlist		
START_FLAT		
START_SCOPE	*	
😳 feature	-	

Figure 19: Show Playlist Opening

3.2.3 Show Playlist Cleaning

To delete a Show Playlist from the server, click on the "Cleanup" button – see **Figure 19**. You will be asked for an appropriate password to complete this operation.

Select the Show Playlist you want to delete in the "Delete" window that appears and click "Delete" to permanently remove it from the server.

3.3 Show Playlist Playback

3.3.1 Playback Tab Overview

After having created or opened a Show Playlist according to Section **3.2**, the corresponding elements chain can be played. To proceed with this playback operation, select the "Playback" tab – see **Figure 7**. This tab is presented below:





Click on the "Play" button in order to start the Show Playlist playback. The "Show Playlist Progress Bar" indicates the progression within the whole Show Playlist whereas the "Clip Progress Bar" indicates the remaining time within the current clip being played. The "Playback" tab will then look like the following:



Figure 21: Playback Tab during Playback

During playback, the green "Play" flag is displayed and the name of the current clip appears just beside it – see **Figure 21**.

If the Show Playlist playback needs to be stopped, click on the "Stop" button. If the playback needs to be paused, click on the "Pause" button. The "Pause Mode" is presented in paragraph **3.3.3** below.



3.3.2 Show Playlist Progress List-Box

The right part of the "Playback" tab contains the Show Playlist progress list-box. This list-box displays the current position of the playback within the Show Playlist using a green flag. The elements already "played" are flagged using a yellow mark whereas the elements that are not played for the moment do not have any flag at all as presented in the figure below:



Figure 22: Show Playlist Progress List-box

3.3.3 Pause Mode

When in Pause mode, you can skip to the previous clip or to the next clip within the Show. You can also directly go to three minutes after the pause location or go back to three minutes before the current pause location within the current clip – of course if allowed by the clip remaining time. The buttons required in order to perform these operations are presented on the figure below:



Figure 23: Playback Tab during Pause

For example, if you choose to go to the next clip from the tab presented above, the updated tab will look like the following:





Figure 24: Playback Tab after a Clip Skip

Then, you have to click on the "Play" button in order to restart the playback from the point you have chosen.

In order to set the "Loop" mode – to loop the current playlist – select the Mode "Loop" in the check-box. You will be asked for a password to authorize the Mode change. When set to "Loop", the entire playlist will be repeated.





3.3.4 Manual Playback Locking

The manual mode can also be locked in order to avoid an accidental interruption of the show. To lock the manual mode, just click on the "Mode" button that is located beside the "Manual Playback" tag on the top of the tab.

	Scheduled Playback	🔀 Quit
"Mode" button	Destino Hollywood Play 85% Remaining Time: 00:00:08 Show Playlist 0% Remaining Time: 02:00:48	on "Ext Start" do "DCI Black START_FLAT Destino Hollywood NatGeo Lions Serenity Full Movie wi DCI_XYZ_FLAT Black END
	Editor Playback Schedule	

The "Playback" tab will then look like the following:

Figure 25: Manual Playback Locked

This mode also corresponds to the Scheduled Playback presented in the next section. The playback will then only adhere to schedules.



3.4 Scheduled Playback

3.4.1 Schedule Tab Overview

The third tab is called "Schedule" and allows scheduling of Show Playlists according to their start date and time. This tab is presented below:

		"Delete" button					
"New" button	New New	Delete				🔀 <u>Q</u> uit	"Arrow" button
	•	Ν	1on 14 - Sun 2	0, January 2008			to be used to display a
	Time Today	Show Playlist		Annotation Text			specific week
	-12:50 - 12 -18:30 - 18			DTMS:/auto1ST PRINT HOT FU2 TMS:/auto1ST PRINT HOT FU2 TMS:/auto1ST PRINT HOT FU2 TMS:/auto1ST PRINT HOT FU2	ZZ ZZ ZZ		
					Display out-date	d schedules	
	Editor Pla	yback Schedule					

Figure 26: Schedule Tab

You can check a specific week to verify its schedules using the arrows located on the top-left and top-right of the above window. The selected week is displayed between both arrows.

3.4.2 Adding a Show Playlist

In order to add a Show Playlist in the schedule, click on the "New" button and select the Show Playlist that you want to add. You should be asked for a password. Then, the following setting window should appear:

Selected Show	Show Playlist RCSPL(S07) -MADAG	button	
Playlist name	Mon 14 - Sun 20,	January 2008	"Arrow" button to be used to select the
Boxes to be checked in order to choose the	Schedule	playback week	
days within the selected playback	Starts time :	Fri Sat 17:16	"Arrow" buttons to be used to select the playback start time
	Estimated ends time:	18:47	
		<u>S</u> ave <u>C</u> ar	The Show Playlist estimated playback end time is displayed

Figure 27: Show Playlist Setting Window



When you are done, just click on the "Save" button and you will be back at the updated "Schedule" tab as presented below:

8 New	Delete	🔀 Quit
	Mon 2	21 - Sun 27, January 2008
Time	Show Playlist	Annotation Text
Monday, 21	47 RCSPL(S07) -MADAGASCAR3-	
		Display out-dated schedules
Editor Play	yback Schedule	

Figure 28: Schedule Tab after Playlist Addition

3.4.3 Show Playlist Removal

To delete a Show Playlist from the schedule, just select it – it will be reverse highlighted – and click on the "Delete" button. You will be asked for a password.

Assuming that the current schedule was the one listed in **Figure 28**, selecting "RCSPL(S07) – MADAGASCAR3 -" and clicking on the "Delete" button will lead to the following window:







4 Play 2D Content in 3D Mode

The purpose of this section is to provide guidance on how to use a Macro Automation Cue (called "48FPS_PLAYBACK" in this manual) allowing playback of 2D content within 3D Shows. This is useful to play 2D Trailers within a stereoscopic Show without having to generate a stereoscopic version of these Trailers.

Contact your field installer to know how to get the Macro Cue called "48FPS_PLAYBACK".

4.1 "48FPS_PLAYBACK" Macro Addition

The "48FPS_PLAYBACK" Automation Cue has to be added to the Show using the CineLister interface – see section **3**. Note that if CineLister was already running before the creation of the "48FPS_PLAYBACK" Macro, you will need to click on the "Refresh" button within CineLister to see this new Macro in the CineLister Editor Tab – see figure below.

The "Editor" tab of the graphical user interface should appear on the screen. Open or create the Show Playlist corresponding to the 3D Show you want to play according to the procedures presented in section **3.2**.



Figure 30: CineLister Graphical User Interface (GUI)

To be able to play all content, including 2D trailers, within a 3D Show, you need to <u>add the</u> <u>"48FPS_PLAYBACK" Macro Automation Cue to the first element of the Show Playlist</u> according to the procedure provided below:

- 1. Select the first audio-visual element of the Show Playlist displayed on the right part of the "Editor" tab this is the "Black" element in the above example.
- 2. Select the "48FPS_PLAYBACK" Macro in the left part of the "Editor" tab and hit "Add to Show Playlist" on the top of the tab.



3. The following window should appear, asking you to define the Macro Offset:



Figure 31: Automation Cue Offset Setup

Make sure the default settings are selected as presented in the figure above:

- The Offset value shall be set to "00:00:00",
- The Offset mode shall be "from the begin of the clip".
- 4. Hit "Ok".
- 5. The "48FPS_PLAYBACK" Macro Automation Cue should have been added to the first element of the Show Playlist as illustrated below:



Figure 32: "48FPS_PLAYBACK" Automation Cue Added

6. Complete your Show Playlist generation by adding all the required Automation Cues if not already added – see paragraph **3.2.1**.

See section **3** to perform other show management operations (e.g. to save the Show Playlist) if needed.



4.2 Playback Behavior

The "48FPS_PLAYBACK" Automation Cue, as created in this document, will play all of the video elements located after the element to which this Macro is attached at 48 fames per second.

For example, if positioned on the first element of the Show Playlist – 'Black' as it is presented in this document – all of the video content of the Show Playlist will be played in 48fps mode, which corresponds to the processing profile of a stereoscopic CPL – 24 frames 'stereo': 24fps left eye, 24fps right eye.

A 2D 24 frames per second CPL will have each frame duplicated and sent to both HD-SDI outputs allowing usage of the same projector setup for a full stereoscopic show, even if playing 2D content (e.g. 2D trailers.)

5 Acronyms

Term	Definition	
GPI	General Purpose Input	
GPO	General Purpose Output	
KDM	Key Delivery Message	
SPL	Show Play List	
2D	Non-stereoscopic	
3D	Stereoscopic	