

USER MANUAL FOR
DIGITAL CINEMA SERVER
SX-2000A SERIES WITH INTEGRATED MEDIA BLOCK/
SX-2001A SERIES
(SHORT FORM VERSION)

SMS version 8.01

September 6, 2012







SX-2000A Digital Cinema Server with Integrated Media Block



SX-2001A Digital Cinema Server The stunning solution for both 2K and 4K digital cinema

GDC Technology's fifth generation digital cinema playback server, SX-2000A Digital Cinema Server with Integrated Media Block/SX-2001A Digital Cinema Server, designed to fully comply with DCI specifications and FIPS-140 security requirements. The SX-2001A can playback both 2K and 4K DCP on Texas Instrument's DLP Cinema® Series 1 and 2 projectors, retaining all of the attractive SA-2100A's features

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Thank you for purchasing a GDC Digital Cinema Server SX-2000A Series with Integrated Media Block/SX-2001A Series from GDC Technology Limited.

To ensure proper operation and to maximize the server's value, please review this short form User Manual. It will guide you through all the features and benefits of the new SX-2000A with Integrated Media Block/SX-2001A. The full version of the user manual is available on the accompanying CD.

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MANUAL DISCLAIMER

This manual is made with SMS version 8.01 and there might be slight differences depending on the software version the server is running. The contents, features and specifications stated in this manual are subject to change without notice due to continuous product development and improvements. In no other event shall GDC Technology Limited be liable for any loss of profit or any other commercial damages, including but not limited to special, consequential, or other damages.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- · Consult the dealer or an experienced radio/TV technician for help.

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1. INTRODUCTION

1.1. About This Manual

This user manual provides instructions on how to use and manage the GDC Digital Cinema Server SX-2000A Series with Integrated Media Block ("IMB")/SX-2001A Series. The user interface of the server consists of a few key components described in the diagram below **[Figure 1].** The manual has sections on each of these components describing how it can be used to operate the server.

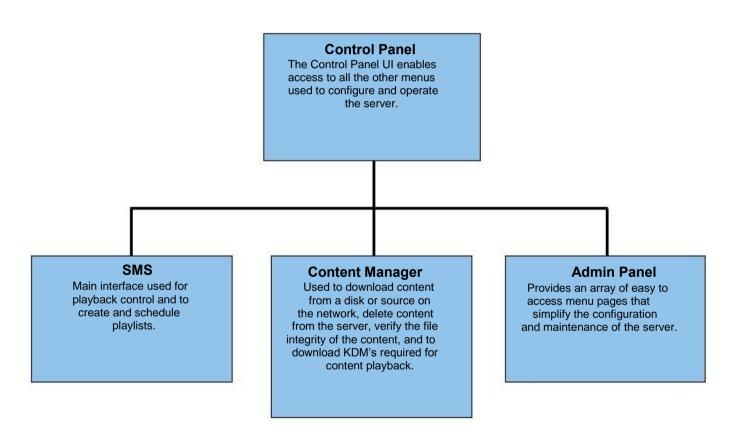


Figure 1 Server UI components.

1.2. Safety Instructions

1.2.1. General Safety Instructions

- The server is intended for installation in a restricted access location.
- The operation environment required for the server should be 0°C 40°C (32°F 104°F).
- For PLUGGABLE EQUIPMENT, the socket outlet shall be installed near the equipment and shall be easily accessible.
- Before operating your server, please read this manual thoroughly, and retain it for future reference.
- Installation and preliminary adjustments should be performed by qualified GDC Technology personnel.
 All warnings on the server and in the documentation manual should be adhered to.
- All instructions for operating and maintaining the server must be followed closely.

1.2.2. Electrical Safety

Safety Warning

- Do not expose the server to rain or moisture, to prevent fire or electrical shock hazard.
- Use a dry cloth when cleaning the server.
- Do not block any ventilation openings.
- Do not install near any heat sources (e.g. radiators, stove or other apparatus that produce heat).
- Refrain from removing the top cover of the server, to prevent electric shock. Consult Tech Support for servicing or maintaining the server.
- You are cautioned that any change or modification not expressly approved in this manual or approved in writing by an authorized representative of GDC Technology could void your warranty and/or authority to operate this server.

2. SMS

2.1. About the SMS Interface

The SMS interface is used for playback control, creating and editing playlists, scheduling and also provides access to advanced configuration options.

2.2. Accessing the SMS Interface



Figure 2 SMS interface.

Switch on the server by pressing the **ON / OFF** button on the front panel of the server, and allow it to boot directly to the **SMS** interface as seen in Figure 2.

NOTE: Pressing the ON / OFF button again will switch the display from the SMS interface to the Control Panel menu.

2.3. Understanding the SMS Interface

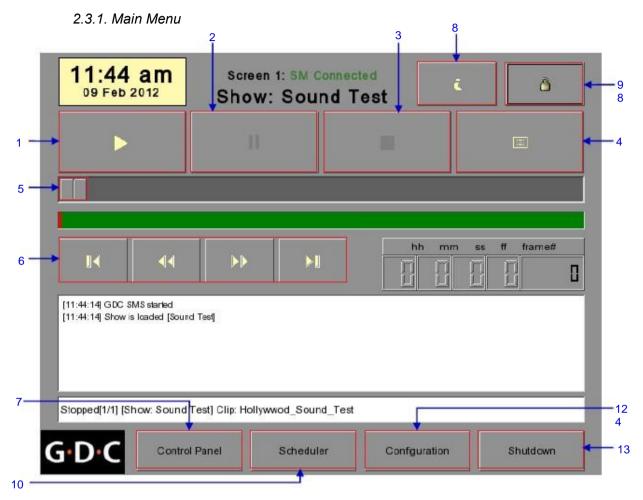


Figure 3 SMS main menu.

1	[▶]	Play button. The [▶] button starts playback when pressed, and is disabled when the system is in paused mode.
2	[11]	Pause button. The [] button is enabled when the system is in playing or pause mode. To resume from pause simply hit the Pause button again.
3	[=]	Stop button. The [■] button is enabled when the system is in playing mode, and stops playback when pressed.
4	[3]	Playlist button. Pressto open the Playlist menu to create a playlist. For more information about the Playlist menu, please refer to Section 2.3.2. Playlist Menu further below.

5	[Slider Bar]	It will start advancing when [▶] is pressed to start a playback. One clip will take one complete cycle from the left to the right. The Slider Bar always returns to the starting point (extreme left) after a clip is finished. When [■] is pressed, the Slider Bar will stop and return to its starting point.
		When playback is paused, the Slider Bar can be moved. The Slider Bar can be moved t o t he left (for rewinding) or to the right (for forwarding).
6	[◀]	Move to the first frame of the clip.
	[00]	Rewind (move back) by the number of frames of the playback.
	[00]	Forward (move forward) by the number of frames of the playback.
	[▶]	Move to the last frame of the clip.
7	[Status Display]	Reports the status of the system. The display shows the number of clips in the active playlist, the name of the active playlist, and the name of the clip currently being played.
8	[/]	INFORMATION button. If [i] is pressed when the system is in stopped mode, the system will show the serial number and the software version of the server. A text box will appear beside the Timecode Display (replacing the navigating buttons [◀] [□ □] [▶]) and the text box will show the serial number and software version of the server.
		Serial Number [Serial #T2K001:0] [DSR Server 8.01-beta-rc9] Software Version
9	r 🖰 1	SCREEN LOCK button - The SCREEN LOCK function will prevent any unintentional screen touches or mouse clicks that could disturb a playback. The screen will be locked when [] button is pressed. No access to the Main Menu (or associated menus) is allowed when the screen is locked. The User level password or higher is needed to unlock the screen. If the screen is locked while the system is playing, the name, duration and the remaining time of the clip will be shown on the screen while the clip is
10	[Control Panel]	playing. CONTROL PANEL button – For returning to the control panel screen of the user interface.
11	[Scheduler]	SCHEDULE button – For scheduling the time and date of the playlists to be shown. The playlist can also be looped for a period of time.
12	[Configuration]	CONFIGURATION button – For changing the general options on the system (e.g. enable startup/ shutdown password, change access level passwords, perform software upgrade, etc.).
13	[Shutdown]	SHUTDOWN button. For shutting down the server or restarting the application.

2.3.2. Playlist Menu

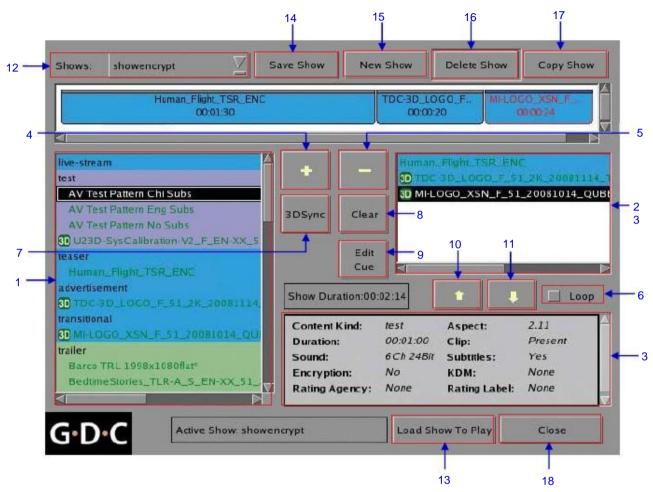


Figure 4a Playlist menu.

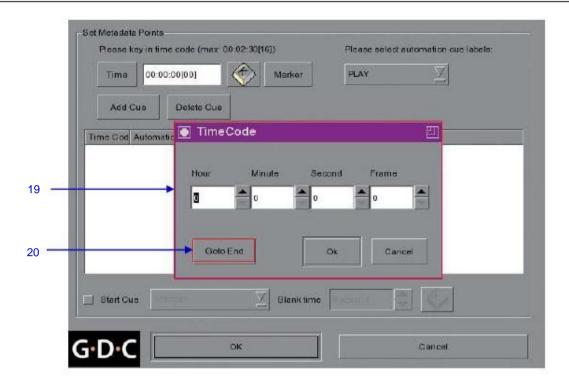
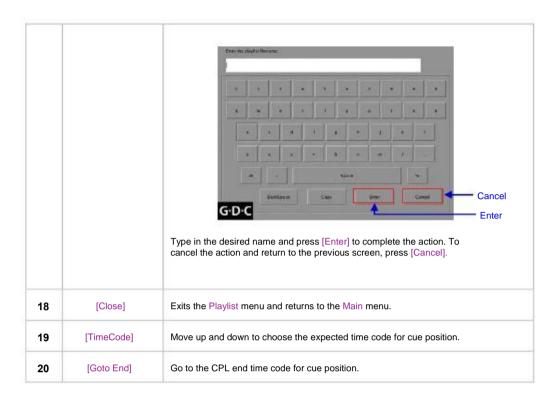


Figure 4b TimeCode keypad.

1	[Server Content]	The content on the server is listed here. Content is shown in alphabetical order grouped by [Trailer, Feature, etc]. Available automation cues are listed under cues.
2	[Playlist Content]	The contents of the playlist being currently edited are shown here.
3	[Clip Information]	Displays information about the selected item in Server Content. This includes the Name, total Duration, Sound (Audio) format, if Encryption is present, if a Composition Playlist exists, if it has Subtitles, if a current KDM is on the server, Rating Agency, and Rating Label.
4	[+]	Adds content to the Playlist by pressing [+] after an item from the Server Content is selected.
5	[-]	Removes the selected item from the Playlist content.

6	[Loop]	When [Loop] is selected, the contents in the Playlist will run continuously in a loop when [▶] is pressed.
7	[3D Sync]	Synchronizes clips for 3D showing.
8	[Clear]	Removes all clips on the playlist.
9	[Edit Cue]	Go to Edit Cue>TimeCode Keypad (refer to 19 in Figure 4b) > Goto End (refer to 20 in Figure 4b).This will bring up the cue editing user interface used to add, remove or edit existing automation cues in the playlists.
10	[*]	Moves the highlighted clip in the Playlist ahead in chronological order. Makes sure an item is selected from the Playlist before pressing []. When [] is pressed, the selected item will move to before the previous clip.
11	[#]	Moves the highlighted clip in the Playlist down in chronological order. Makes sure an item is selected from the Playlist before pressing []. When [] is pressed, the selected item will move to after the next clip.
12	[Shows]	This displays a list of all the playlists saved on the server. Selecting a playlist here displays the contents of the playlist for editing. A playlist that is currently playing may not be edited.
		NOTE: Selecting a playlist here does not load it for playback. The "Load Show to Play" button has to be pressed to load the playlist into the player for playback.
13	[Load Show To Play]	Loads the selected playlist into the player for playback.
14	[Save Show]	Saves the playlist currently being edited.
15	[New Show]	Creates a new blank show playlist. A name must be specified for the playlist.
16	[Delete Show]	Make sure an item is selected in the Shows drop-down menu. When [Delete Show] is pressed, the system will delete the selected playlist and remove it from the Shows drop-down menu.
		The delete action is irreversible. The system will prompt you to confirm the delete action before it proceeds to delete the playlist.
17	[Copy Show]	Duplicates currently selected playlist. When [Copy Show] is pressed, a text entry keypad will appear for you to enter the new name of the duplicate playlist.



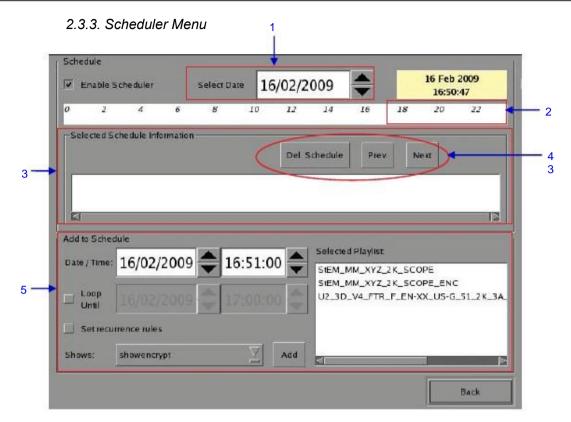


Figure 5 Scheduler menu.

1	[Select Date]	Specifies the date and time of the schedule.
2	[Timeline]	Displays shows scheduled on a 24-hour timeline for the date selected in (1).
3	[Selected Schedule Information]	Displays information such as name, time and duration of the selected show schedule.
4	[Delete Schedule]	Deletes the currently selected show schedule.
	[Previous], [Next]	Navigate show schedules by going forward and backward one at a time.
5	[Add to Schedule]	(a) Select the playlist to be scheduled. The contents of the selected playlist will be displayed in the "Selected Playlist" window. (b) Select the time for the scheduled show.
		(c) To loop the show until a certain time, check 'Loop until' and select the time.
		(d) If the schedule is to be repeated every day or week, check 'Set recurrence rules'.
		(e) Press the 'Add' button. A dialog will pop up for specifying the recurrence rules if it was checked.

2.4. Show Playlist

2.4.1. Create a Show Playlist

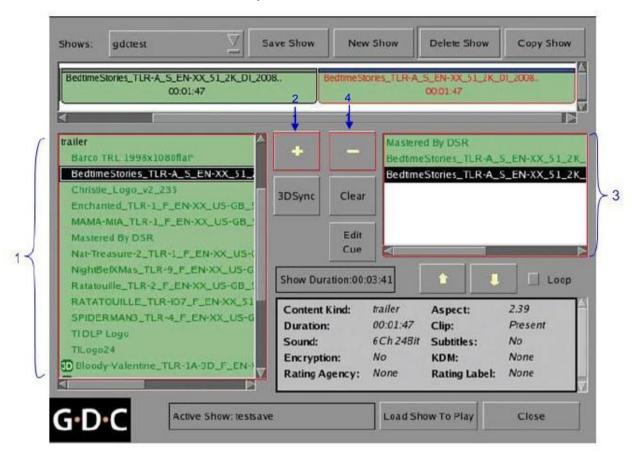


Figure 6 Playlist menu.

1 On the Playlist menu, all compositions stored in the server are listed in the Server Content column on the left. Server content is shown in alphabetical order grouped by type [Trailer, Feature, etc.]. Available automation cues are listed under 'cues'. Select the composition to add to the playlist and press [+]. Repeat the same step to add other 2 compositions (e.g. trailers or advertisements) to the playlist. 3 Compositions in the playlist are shown in the Playlist column on the right. Use [] (move up) and (move down) to change the order of compositions in the playlist. The order of the compositions in the playlist may also be changed by dragging their icons in the timeline display. You can remove compositions from the Playlist column by selecting the clip that you want to 4 remove and pressing [-].

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(Short Form Version)

2.4.2. Editing Cues

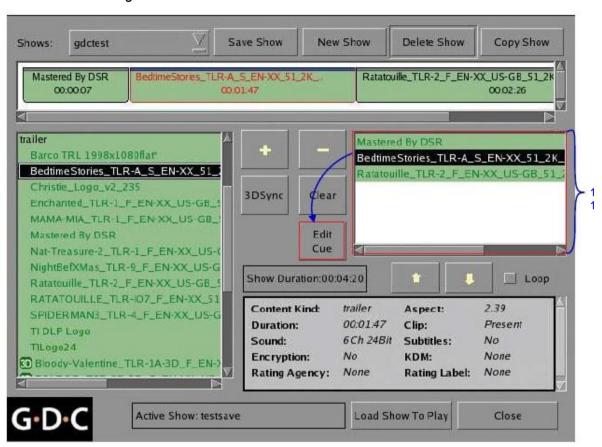


Figure 7 Playlist menu.

To edit a cue of a composition on the playlist, select the desired composition from the Playlist menu and press Edit Cue. A new window displaying the Edit Cue menu opens as seen in Figure 8.

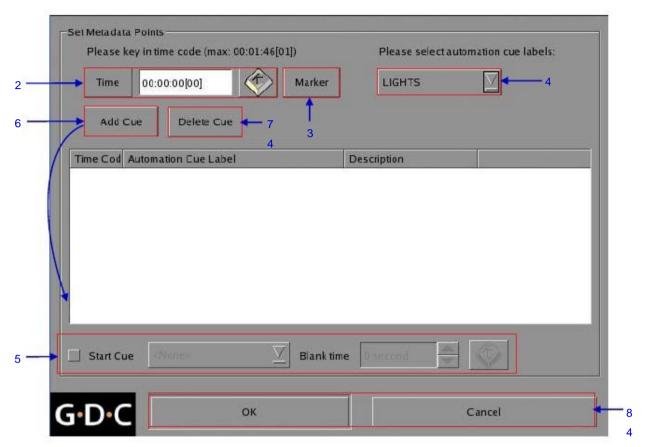
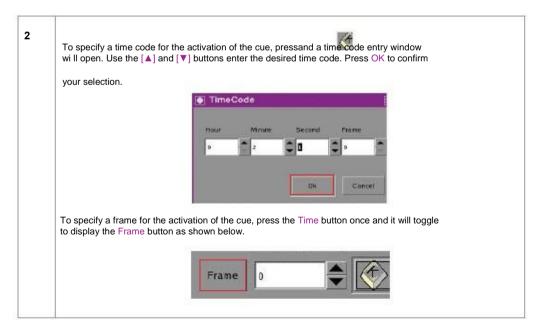
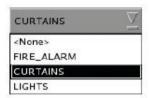


Figure 8 Edit Cue menu.



Pressanda frame number entry window will open. Key in the desired frame number and press Enter. Enter the frame number (max 2545) Erner 3 Press Marker to view any markers present in the composition. If the composition does not contain any markers, a small window pops up to indicate that there are no markers present. Warning To add an automation cue label, select the desired automation cue label from the dropdown 4 list as seen below. LIGHTS FIRE_ALARM CURTAINS LIGHTS

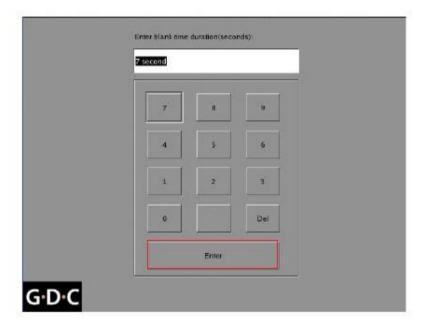
To add a start cue, tick the Start Cue option and select the desired automation cue label from 5 the dropdown list as seen below.



To specify the blank time, press desired blank time and press Enter.



and a blank time entry window will open. Key in the



NOTE: A start cue is activated immediately before the composition plays. The blank time indicates the time interval between the end of the start cue and the start of the composition's playback.

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2.4.3. Saving the Playlist Save Show Delete Show Shows: showencrypt **New Show** Copy Show StEM_MM_XYZ_2... StEM_MM_XYZ_2... U2_3D_V4_FTR_F_EN-XX_US-G_51_2K_3A_ 00:11:39 00:11:39 01:24:17 live-stream Human_Flight_TSR_ENC StEM_MM_XYZ_2K_SCOPE test teaser StEM_MM_XYZ_2K_SCOPE_ENC Human_Flight_TSR_ENC U2_3D_V4_FTR_F_EN-XX_US-G_5 3DSync Clear advertisement transitional Edit trailer Cue rating feature Show Duration:01:49:05 Loop cues 1.77 Content Kind: Aspect: **Duration**: 00:01:30 Clip: Present No Sound: 2Ch 24Bit Subtitles: Encryption: No KDM: None Rating Agency: None Rating Label: None Load Show To Play Active Show: showencrypt Close 2

Saving the playlist.

Figure 9

Press Save Show to save the playlist. This ensures any changes to playlist will not be lost.
 Press Load Show to Play and return to the Main menu.

2.5. Show Schedule

2.5.1. Schedule a Show

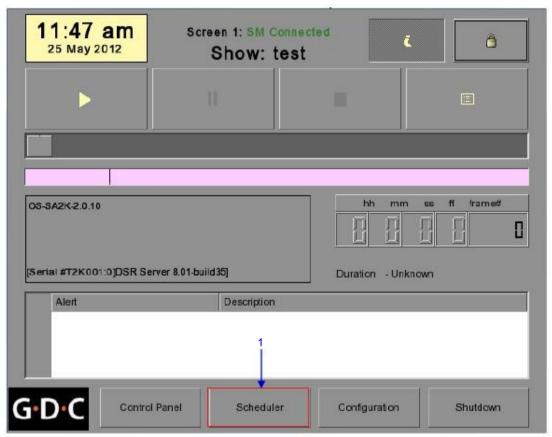


Figure 10 SMS Interface [Scheduler].

1 On the Main menu, press Scheduler. A new window opens as seen in Figure 11.

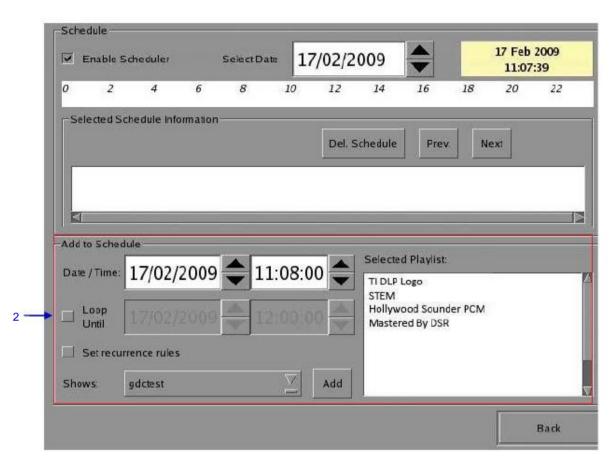
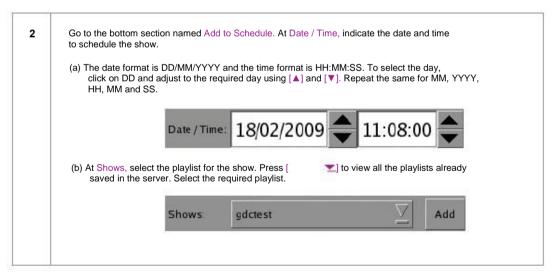


Figure 11 Scheduler menu.



(c) The Selected Playlist column on the right displays the clips in each playlist.



(d) If you want the playlist to loop for a period of time, check Loop Until and indicate the date and time to end the loop.



(e) Press Add after the schedule date/time is fixed and playlist is selected.



(f) If the new show schedule does not conflict with other schedules already saved to the server, the schedule will be added to the existing list of schedules in the server.

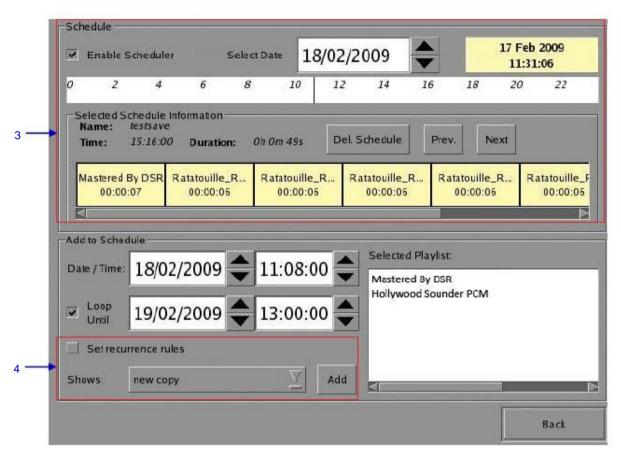
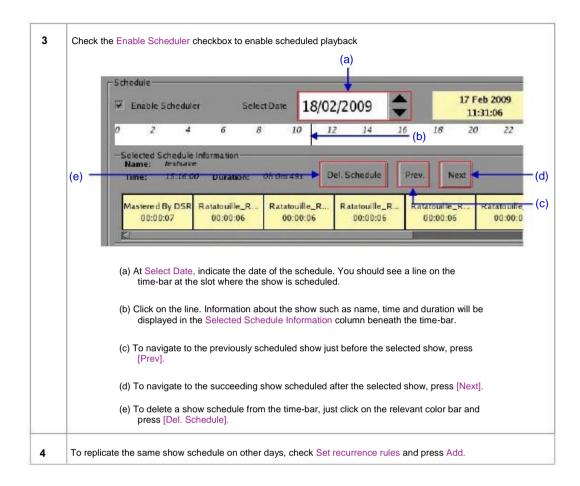


Figure 12 Viewing schedule information.



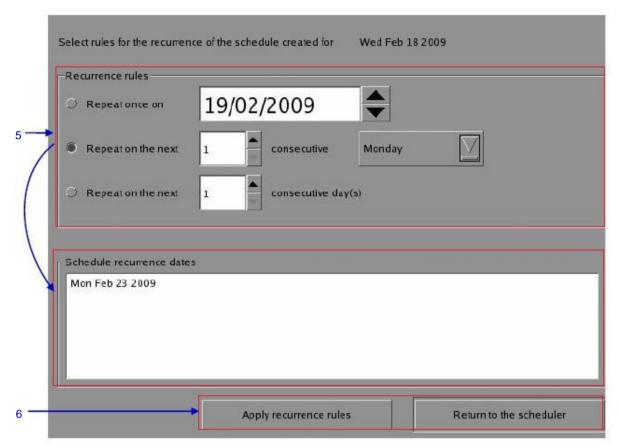


Figure 13 Replicating show schedule.

A new window opens as seen in Figure 13. Select the required recurrence option. Only one option can be selected. Upon selection, all effective recurring dates will be listed in the Schedule recurrence dates column at the bottom.

6 Press Apply recurrence rules to schedule the recurrence dates. If no option is selected, press Return to the scheduler to return to Scheduler menu. When on Scheduler menu, press Back to return to the Main menu.

3. CONTROL PANEL

3.1. About Control Panel

The Control Panel UI provides access to all the other menus used to configure and operate the SX-2000A/SX-2001A server. To get to the Control Panel, press the On/Off button on the front of the server. Alternatively, press Control Panel on the Main menu as shown in **Figure 14.**

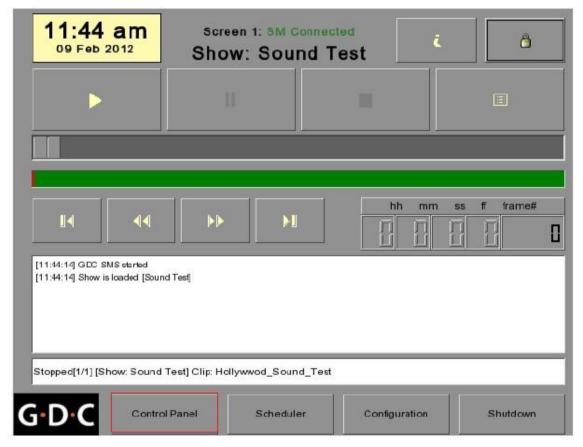


Figure 14 Control Panel menu.

3.2. Control Panel Menu

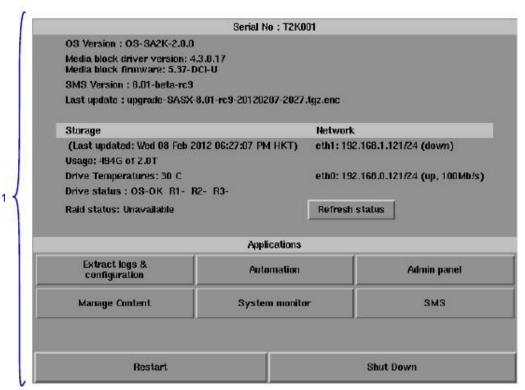


Figure 15 Control Panel menu.

Switch ON the server and allow it to boot up to prompt directly to the SMS interface. When the SMS interface is shown, push the ON/OFF button once or press the Control Panel button and a new window for the Control Panel menu opens as shown in Figure 15. The Control Panel includes the Extract Logs & configuration buttons, the Automation button, Admin panel button, Manage Content button, System monitor button, SMS button, Restart button, Shutdown button and a Refresh status button. System information including the serial number, OS version, SMS version, network and storage information can also be seen on the Control Panel UI.

NOTE: The Refresh status button is used to manually refresh the status of the hard disks in the server. This button should not be pressed during playback to prevent disruption of playback.

WARNING: Do not press the ON/OFF button for more than 2 seconds when in the Control Panel menu to prevent accidental shutdown of the system. This may cause a hard reset and any running applications will be terminated without visual warning.

The SMS software continues to run in the background when using the Control Panel. This allows access to other server functions when playback is in progress. It is recommended that these functions be used very sparingly to avoid unnecessary system load that can potentially affect playback performance.

3.3. Manual Automation Execution

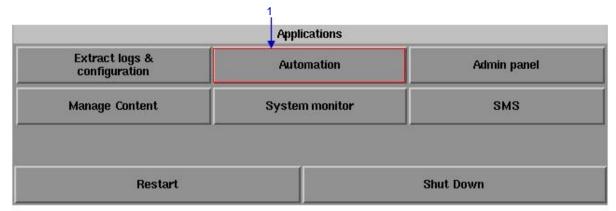


Figure 16 Accessing Automation.

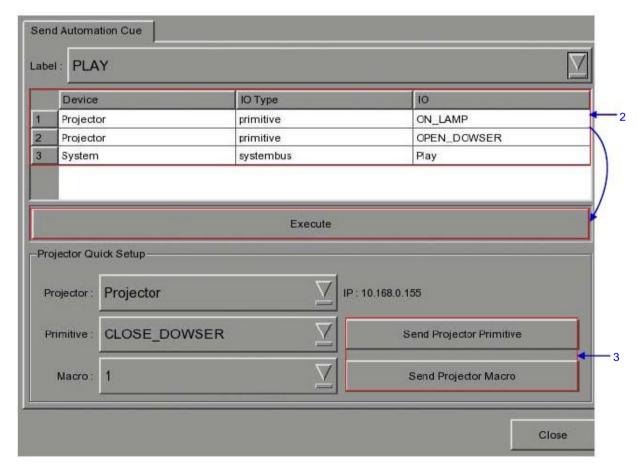


Figure 17 Executing Automation.

- Automation labels and projector commands can now be executed from an interface on the Control Panel. Press Automation on the Control Panel to start the manual automation interface as shown in Figure 16.

 A new window opens as seen in Figure 17. Select an automation label to view the actions.
- 2 A new window opens as seen in Figure 17. Select an automation label to view the actions associated with the label. Press Execute to execute the automation label.
- When a projector is configured for automation, projector primitives and macros can be triggered from this interface as well. Select the projector primitive or macro to be executed, and click the Send Projector Primitive or Send Projector Macro to send the command to the projector.

4. CONTENT MANAGER

4.1. About the Content Manager

4.1.1. Introduction

The SX-2000/SX-2001Content Manager allows the user to manage the contents of the server to:

1	Download content from a disk or source on the network.
2	Download keys [KDM's] required for playing back content from disk or source on the network.
3	Delete content that exists on the server.
4	Check that the content that is already on the server is fine and the files are complete and proper.

4.1.2. Accessing the Content Manager

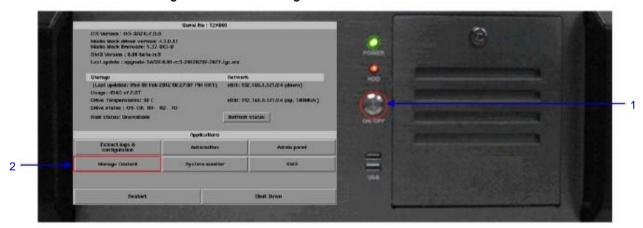


Figure 18 Manage Content Button.

The Content Manager can be accessed from the Control Panel menu. Press the ON/OFF button on the front panel of the server to switch to the Control Panel menu. Alternatively, press Control Panel on the Main menu.
 Press Manage Content to go to the Content Manager main menu.
 NOTE: The Content Manager can run in the background and does NOT need to be exited. The user can leave the Content Manager to go back to the management console by pressing the

4.2. Content Management

ON/OFF button on the server.

4.2.1. Ingesting Content

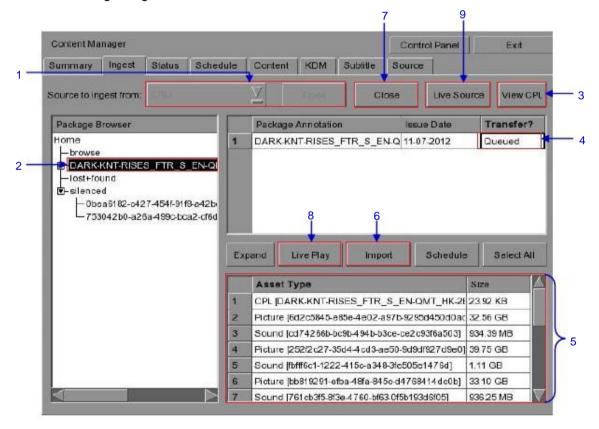


Figure 19 Ingesting a package or CPL from a source located in a specific directory in the network.

1	Select the source of data you want to ingest content from and click Open.						
	Please refer to Section 4.3 Source Management to configure the source of data.						
2	Browse the source and select the directory where the package is located. The list of packages in the directory will be displayed in the top right section of the screen.						
3	Click View CPL to display the list of CPLs available in the packages. You can use this button to toggle between the package list and CPL list displayed in the top right section of the screen.						
4	Click under the Transfer column to select the package or CPL you wish to download. A green check ✓ indicates a selected package or CPL. You can select multiple packages or CPLs.						
5	Information about the selected package or CPL, including the file size, is shown in the section below the package or CPL list.						
6	Press Import to queue downloading of the package or CPL. (To bypass ingestion for direct playback you can press Live Play instead. Refer to Live Play below for more info.)						
7	When done selecting the package(s), click the Close button.						
	IMPORTANT: Always press Close after you are done starting the download of content. You can monitor the progress of ingest by pressing the Status button. Please refer to Section 4.2.6. Monitor Ingest Progress for more information about Status.						
8	Live Play can be used instead of Import in order to bypass content ingestion and play directly back from a CRU or network source. This is not supported through USB or DVD but can be used for direct playback through a CRU or network source (provided the network source has sufficient bandwidth to stream the content).						
	IMPORTANT: You should always use Import whenever possible.						
9	When you press the Live Source button you can view all clips currently mounted and available through the Live Play feature. You can detach Live Play sources through this interface as well. You should always detach live play sources whenever you are done using them via Live Play.						

4.2.2. Ingesting Content from USB Disk

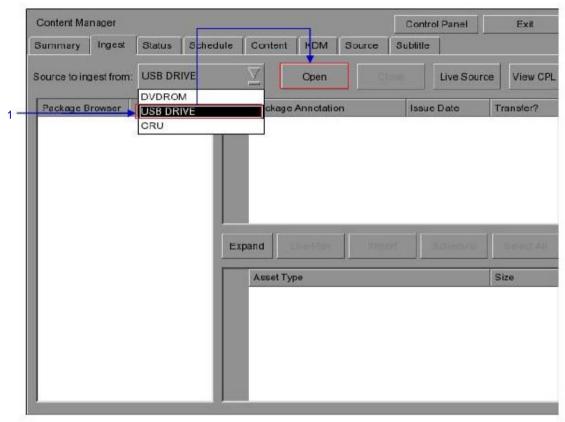


Figure 20 Opening a USB disk connected to the server

Select USB drive from dropdown list and click Open. (Continued on next page)

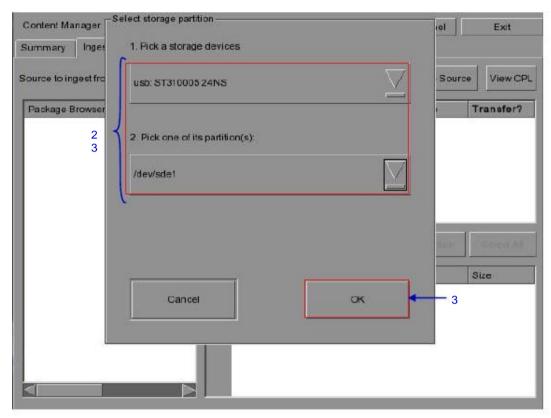


Figure 21 Selecting the USB storage device and its partition

2	Select a storage device and its partition from the dropdown lists.	
3	Press OK to confirm the selection.	

4.2.3. Ingesting from DVD-ROM Drive

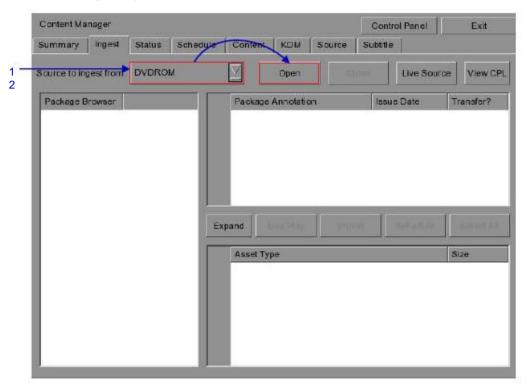


Figure 22 Opening from the DVD-ROM Drive connected to the server

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Select DVDROM from dropdown list and click Open. (Continued on next page)

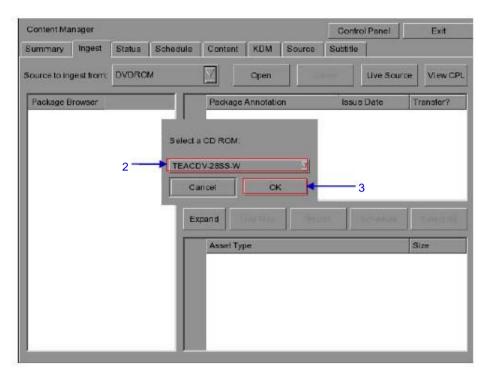


Figure 23 Selecting the CD/DVD disk from the dropdown list.

2 Select the CD/DVD device from the dropdown list.

3 Press OK to confirm the selection.

4.2.4. Ingesting from CRU DataPort



Figure 24 Powering up the CRU DataPort.

1 Press the GREY button on the front of the CRU DataPort and the blue light will light up.

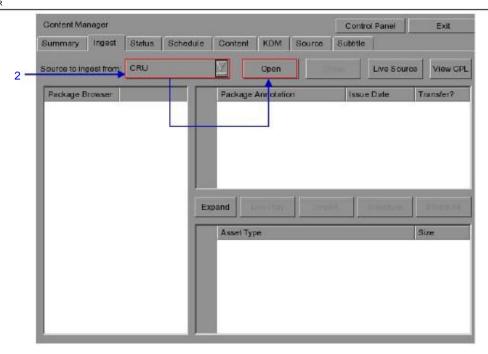


Figure 25 Opening the CRU DataPort connected to the server

2 Select CRU from dropdown list and click Open. (Continued on next page)

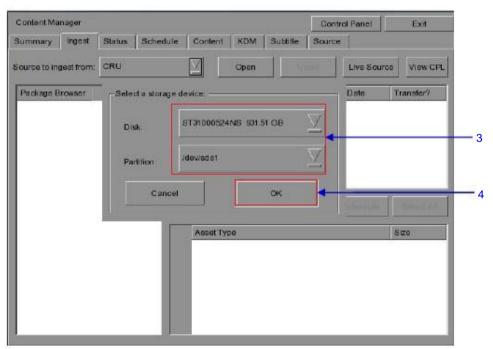


Figure 26 Selecting the storage device and its partition.

Select a storage device and its partition from the dropdown lists.
 Press OK to confirm the selection.

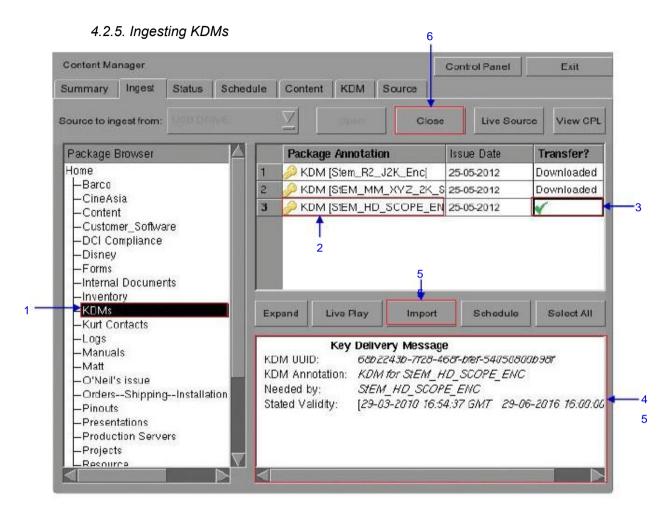


Figure 27 Ingesting KDM from a directory in the selected source.

1	Select the directory in the selected source where the KDM is located.
2	Shows the KDMs present in the selected directory that are valid for this server.
3	Click under the Transfer column to select the KDM you wish to download. A green check indicates the selected KDM.
4	Shows the details of the selected KDM, including target, CPL, and date of validity.
5	Press Import to start the import of the KDM. The green check will change to Queued.
6	When done selecting the KDM, press Close to close the Package Browser.

4.2.6. Monitor Ingest Progress

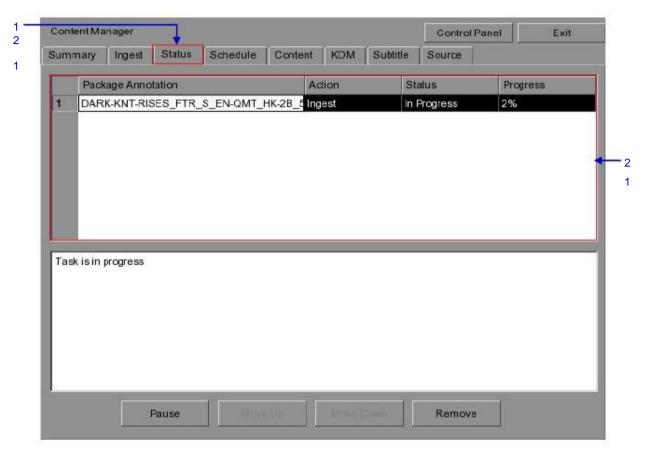


Figure 28 Monitoring the progress of download of the packages.

Select the Status option.

 Shows the download status of the packages or CPLs. In this example, downloading of some packages or CPLs is incomplete.

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4.2.7. Cancelling Ingest

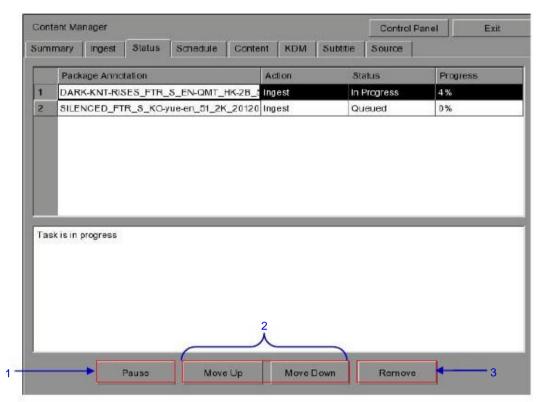
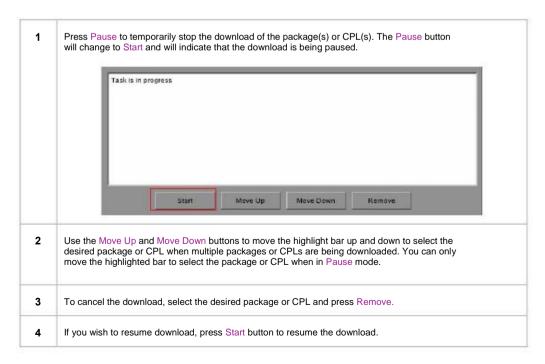


Figure 29 Content Manager - Status



4.2.8. Deleting Content

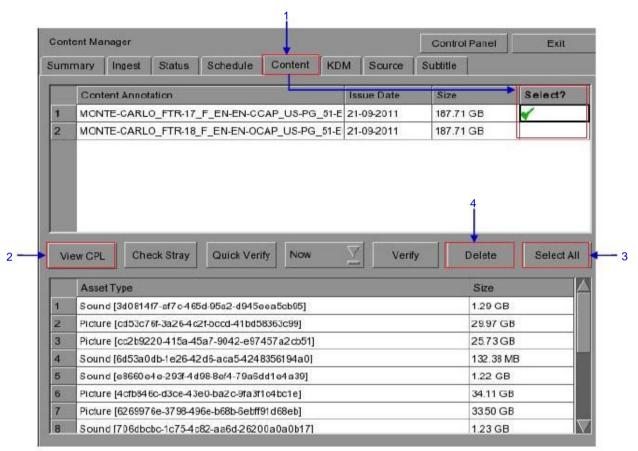
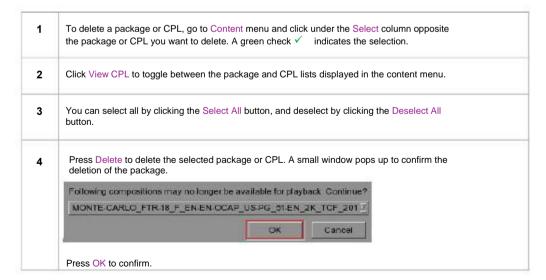


Figure 30 Deleting a downloaded package or CPL



4.2.9. Checking Content Integrity

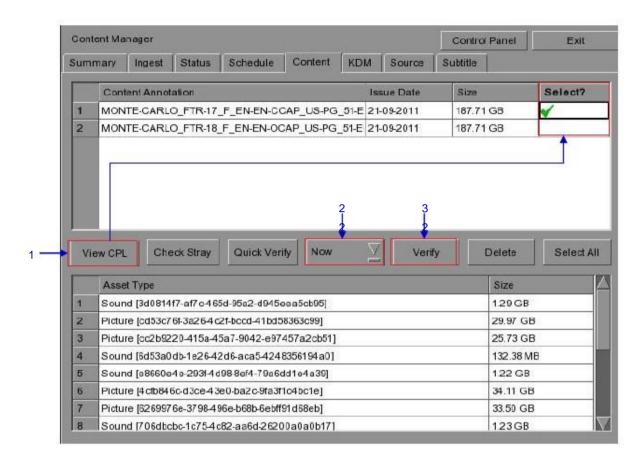
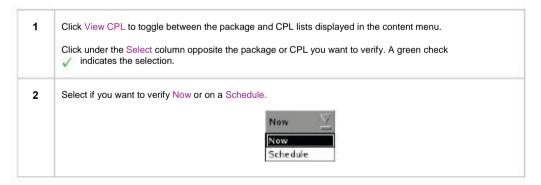
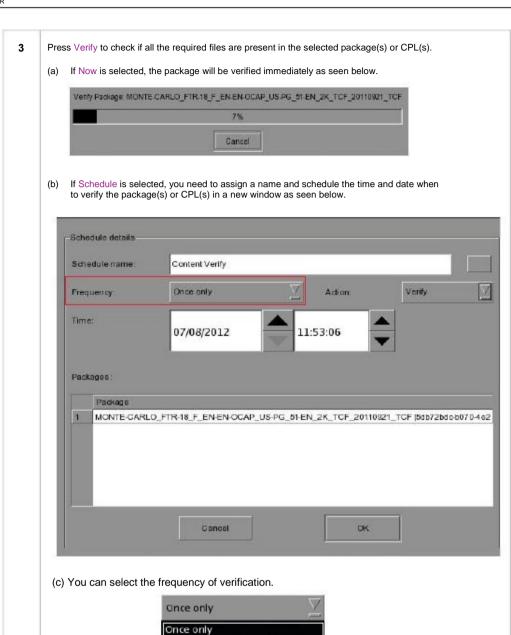


Figure 31 Verifying the integrity of the files in the package(s) or CPL(s).





Once every day Once every week Once every month

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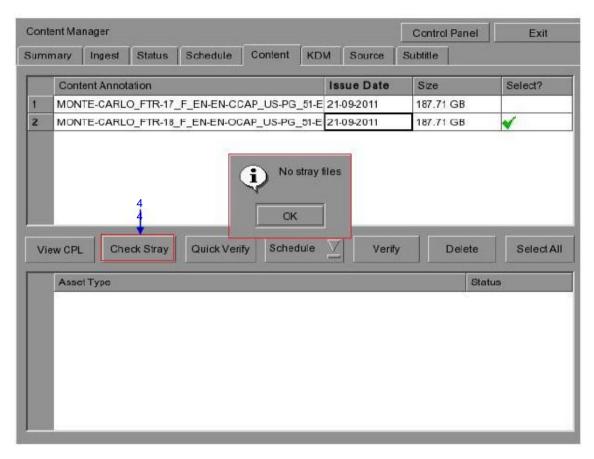


Figure 32 Checking for stray files in package(s) or CPL(s)

You can check if there are stray files in the selected package(s) or CPL(s) by pressing Check Stray. A small window pops out to confirm if there are no stray files.

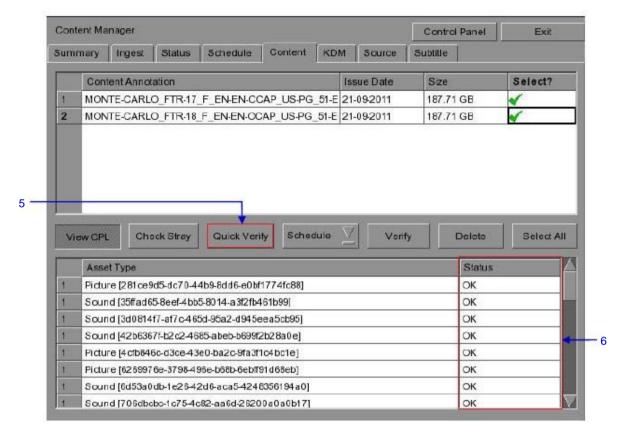


Figure 33 Package [Quick Verify]

Select Quick Verify to quickly check the integrity of the files in case it is modified or corrupted by calculating hash for each file in the selected package(s) or CPL(s).

You will see OK under the Status column after verifying that no problems are detected. If errors are found, the description of the error will be shown instead as seen in Figure 33 above.

NOTE: If there is an error in the selected package, it will indicate Failed under the Status column.

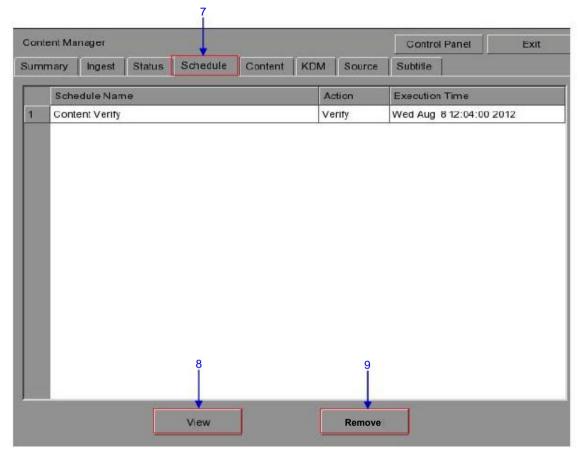


Figure 34 Content Manager [Schedule].

7	You can view the list of package(s)/CPL(s) that you have scheduled for verification by selecting the Schedule option.
8	Select the desired package or CPL and press View to see its schedule details.
9	Select the desired package or CPL and press Remove to delete it from the schedule list.

4.3. KDM Management

4.3.1. Manage KDM

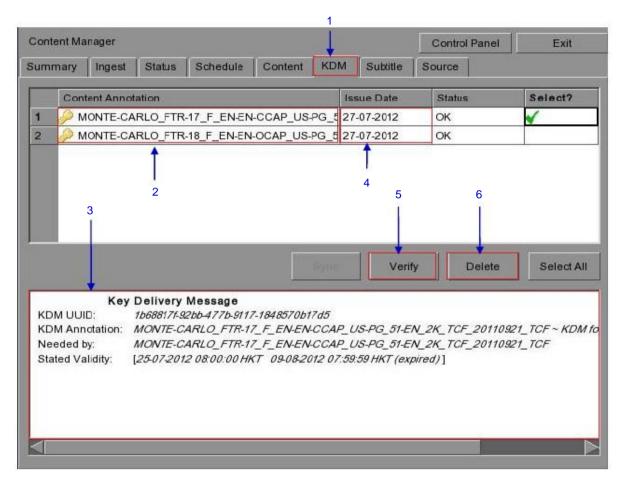


Figure 35 KDM Manager.

1	Select the KDM tab in the Content Manager menu.
2	Show the KDMs present in the selected directory that are valid for this server.
3	Show the details of the selected KDM, including target, CPL, UUID and date of validity.
4	Display date of issue for KDM.
5	Verify the integrity of the KDM.
6	Delete removes KDM from the server.

5. SERVER OPERATION NOTES

5.1. Important Notes

Each time, server boot will take up to five (5) minutes.

In the event of power loss or forced shutdown, server boot may take up to twenty (20) minutes. The server must complete bootup before playback can be started. It is recommended to ALWAYS follow proper power up & shutdown procedures (see section 5.2.).

The SMS will be locked by default.

Ethernet Connection between the Server, SM and Projector is REQUIRED for successful playback. Customers must ensure the cable is secure and the switch used (in case of non-IMB systems) is reliable.

5.2. Power Up & Shutdown

This section lists the proper power up and shutdown steps that will result in the most optimal performance for the servers.

5.2.1. Power Up

- a) Power up the projector first and then the server. This is necessary for IMB board servers to operate properly.
- b) It is recommended to reboot the projector if it has been idle longer than 3 minutes without the connected server powered on.

5.2.2. Shutdown

- a) Always shutdown the servers before the projector. This is a MUST for IMB servers.
- b) Always use the shutdown option from the server interface. Do not unplug the power, switch off the power switches, or hold down the power button during normal use.

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