



# Makalu 1.6

## User Manual

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# 1. Introduction

## 1.1 About this document

### Notice

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### Notice

This user manual applies to the following Makalu version:

**Release 1.6**

This document is intended for beginner and intermediate Makalu users. It describes the main Makalu functions, the most frequently used tasks, and workflows.

It includes, for example, information and instructions on how to:

- access and use the Makalu applications
- ingest, preview, and manage files
- create and manage playlists, shows, and clips
- manage and assign graphics
- control the rundown

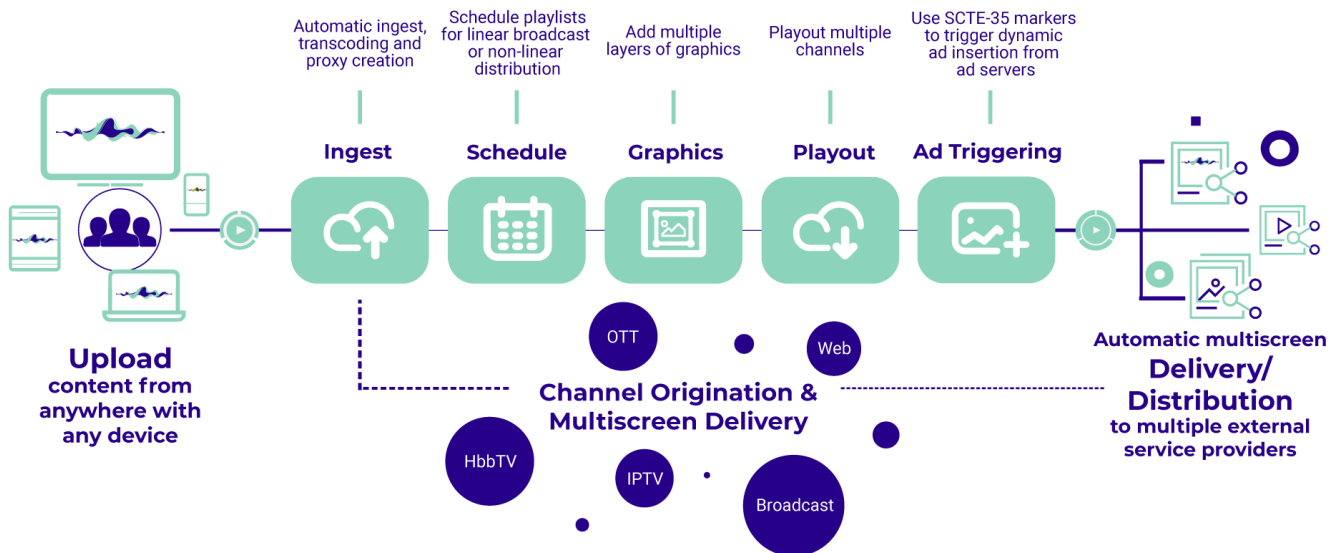
## 1.2 About Makalu

Makalu is a software-defined playout automation, suitable for broadcasters and content providers of any kind and size. It enables a full-featured end-to-end signal workflow – from ingest to distribution – and covers further media tasks like storage, media management, transcoding, graphics, planning, playout, and streaming. It is designed for managing and distributing linear content to social media, broadcast, IPTV, and OTT platforms.

The system is based on a manufacturer-independent, microservice-oriented architecture to achieve a maximum level of flexibility and scalability. It runs on most public or hosted private clouds as well as on virtualized environments and on-premises. This enables a wide range of applications, including hybrid broadcast concepts (for example, cloud-based planning and physical playout servers).

## 1.3 Functional overview

The following graphic shows the basic workflow when using Makalu:



*Makalu basic workflow and functional areas*

From a high-level perspective, Makalu consists of the following functional areas:

- Ingest
- Schedule (Traffic/Planning)
- Graphics
- Playout (Automation)
- Ad triggering (optional)

### 1.3.1 Ingest

The ingest functionality provided by Makalu is focused on the file-based upload of video content. To upload files, the included Asset Uploader application can be used. Uploaded video files are automatically processed, which includes, for example, the creation of a thumbnail image, a low-res (proxy) video file, and media information (technical metadata). As a result, the processed files can be used properly by Makalu. In addition to file-based content, Makalu also supports live sources. For more information, see section [Ingest](#).

### 1.3.2 Schedule

Makalu includes a traffic component for both strategic and operational planning, as well as for rough and detailed daily planning. It enables using uploaded files to create shows, adding shows to playlists as well as adding graphics and other secondary events. A playlist can be added to the rundown in the Makalu Automation to define the content the playout should actually play. For more information, see section [Schedule](#).

### 1.3.3 Graphics

Makalu uses the Singular.Live graphics platform for overlay graphics, which provides tools for composing, controlling, and output of professional graphics. Each output generated by Singular.Live can be received by the Makalu Automation and can be used as an additional layer on top of the main video output. For more information, see section [Graphics](#).

### 1.3.4 Playout

The Makalu Automation component is used to control one or more players running on playout nodes, that are seamlessly playing video files or live sources from a playlist. The automation can be controlled either manually by the operator or scheduled/time-triggered via the planning component. The player output can be distributed to web, OTT, and IPTV targets. For more information, see section [Automation](#).

## 1.4 Accessing Makalu

### 1.4.1 Access management and sign-in methods

Makalu provides a protected environment that requires users to log in first.

For managing user identities and controlling access to resources, Makalu supports Identity and Access Management (IAM). It also features Single Sign-On (SSO) to simplify user login by allowing users to access multiple services with a single set of credentials.

Makalu provides the following sign-in methods:

- signing in via a Makalu user account, by entering a username and password, created specifically for a particular Makalu user
- signing in via Microsoft Entra ID (formerly Azure Active Directory/Azure AD), by using a corresponding account

### 1.4.2 Accessing Makalu applications

To control its functional areas, Makalu provides several applications (apps) with web-based user interfaces (UIs). Depending on the preferred workflow, there are multiple ways how to access and use the available apps. The common approach is to use the **Makalu Hub** as the central UI and entry point for accessing and opening all available Makalu apps. It consists of one or more customizable dashboards and provides access to all available apps. The Makalu Hub is part of the **Makalu UI**, which combines multiple Makalu apps into a single UI.

### 1.4.3 Makalu Hub

#### Accessing the Makalu Hub

To access the **Makalu Hub**, proceed as follows:

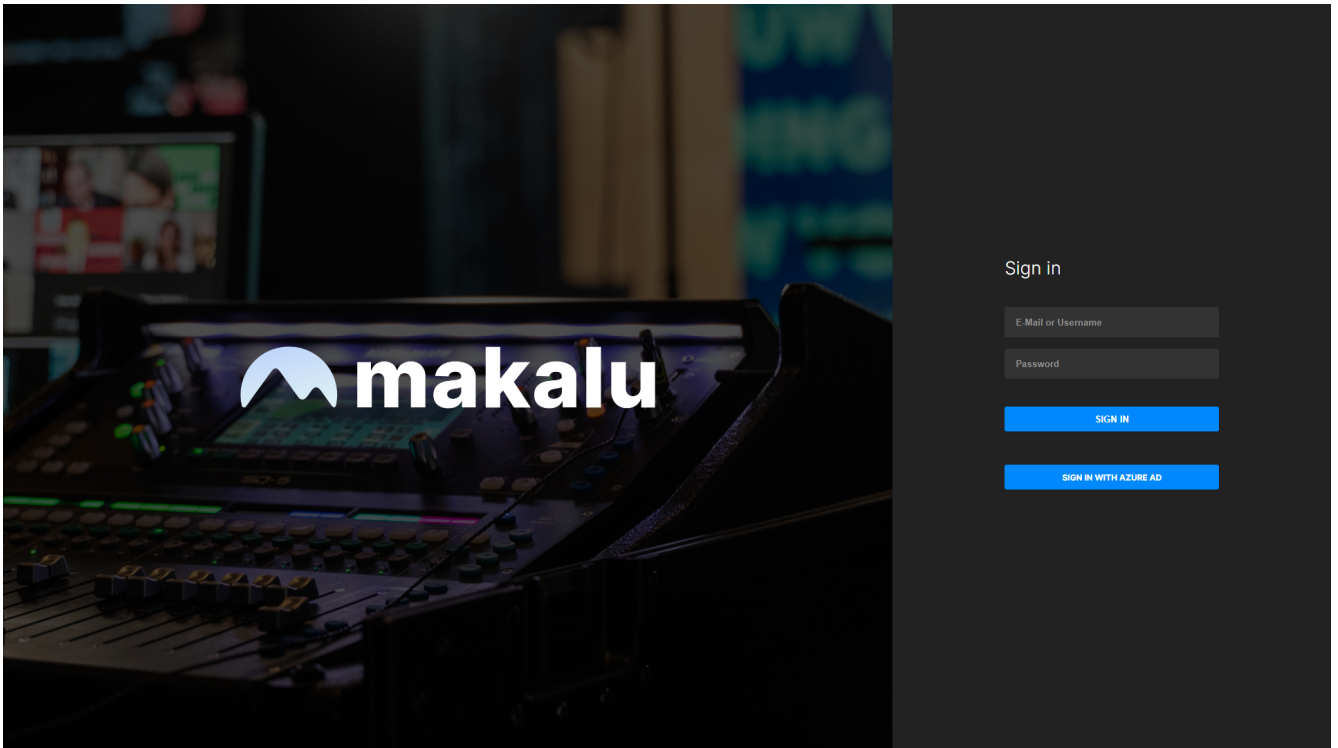
1. Open the following URL in your browser:

```
https://hub.<customer-identifier>.makalu.live/dashboard
```

#### Notice

Replace `customer-identifier` with your actual customer identifier, for example, `exampletv`.

*The Makalu sign-in screen is displayed.*



*Makalu sign-in screen*

2. Sign in, by using one of the available sign-in methods:
  - a. To sign in with your Makalu user account, enter the corresponding credentials and click **Sign in**.
  - b. To sign in with a Microsoft Entra (Azure AD) account, click **Sign in with Azure AD** and enter the corresponding credentials.

*The Makalu Hub dashboard is displayed. If you already created a dashboard, your default dashboard is displayed. Otherwise, the **Create dashboard** menu is displayed, which allows you to create your first custom dashboard. For more information, see section [Creating and configuring a custom dashboard](#).*



The screenshot displays the Makalu Hub dashboard interface. At the top, there are navigation tabs for 'Assets', 'Traffic', and 'Automation', along with a 'Playout Operator' dropdown and user profile 'HM'. The main content area is divided into three sections:

- Applications:** A sidebar on the left containing a search bar and a list of categorized apps: PINNED (Traffic 2.0, Automation), ASSETS (Asset Uploader, Media, Fileprocessing), AUTOMATION (Automation, Multichannel View), and SCHEDULING (Traffic 2.0, Traffic, Documentation).
- EPG (Electronic Program Guide):** A central grid showing a timeline from 10:30 to 13:30. It lists programs from channels like RTL Television, RTL 2, RTL Nitro, and ntv, with details on content such as 'Sport', 'Nachricht', and 'Wissen im Fluss'.
- Channel Playback:** A row of four video thumbnails from the same channels, showing live or recorded content with timestamps.
- Status & Activity:** A panel on the right showing 'Errors' (0) with a 'No errors' message and 'Transfers' (1) with a 'Clip.mp4' upload progress of 25%.

Makalu Hub dashboard

**Notice**

The screenshot above only shows an example dashboard. The actual dashboard presentation may differ, depending on the layout and the widgets you use.

**Tip**

To log out, open the user menu, by clicking the circle with your initials at the top right and select **Logout**.

**Makalu Hub UI overview****Info**

All Makalu UIs are optimized for use in current versions of Google Chrome and a display resolution of 1920 x 1080 px. Higher resolutions (for example, as used by ultrawide monitors) are also supported.

The Makalu Hub is divided into the **Applications** area on the left side and the **Dashboard** area on the right side.

The **Applications** area is always visible, regardless of the content of the currently selected dashboard. It consists of a list of all available apps, categorized by functional areas. You can search for available apps via the search field at the top. You can also create custom app links (for more information, see section [Creating a custom app link](#)) and pin apps to the top of the list.

*Hub - Applications area*

The **Dashboard** area can be used to display various elements, depending on which information and data you need as a user or which role you have (for example, playout operator, traffic operator, etc.). The focus of this area is to quickly see if a Makalu component is not working as expected or if there was an error, in order to be able to quickly take countermeasures.

Dashboards are customizable. How a dashboard is displayed and what information it shows, depends on the selected dashboard layout and the widgets added to the corresponding layout areas. A widget is a reusable UI component that performs a specific function, such as information display or controlling of UI elements, and can be placed within a dashboard.

The screenshot shows the Makalu Hub interface. At the top, there are navigation tabs for 'Assets', 'Traffic', and 'Automation'. Below this is a 'Playout Operator' section with 'Create new' and 'Edit' buttons. On the left is an 'Applications' sidebar with categories like 'PINNED', 'ASSETS', 'AUTOMATION', and 'SCHEDULING'. The main area is divided into 'EPG' (Electronic Program Guide) and 'Channel Playback'. The EPG section shows a grid of programs for channels like RTL Television, RTL 2, RTL Nitro, and ntv, with a timeline from 10:30 to 13:30. The Channel Playback section shows four video thumbnails for different channels. On the right is a 'Status & Activity' sidebar with 'Errors' (0) and 'Transfers' (1) for 'Clip.mp4'.

Hub - Dashboard area

### Tip

To switch between available dashboards, use the dropdown menu at the top left above the **Applications** area.

## Creating a custom app link

To create a custom app link in the **Applications** area, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the upper right corner click **Create App Link**.  
*A dialog window opens.*
3. Set the app link properties, by entering **Name**, **URL**, **Category**, and selecting a **Group**.
4. Click **Create Link**.

The app link is created and added to the list of available apps in the **Applications** area on the left side.

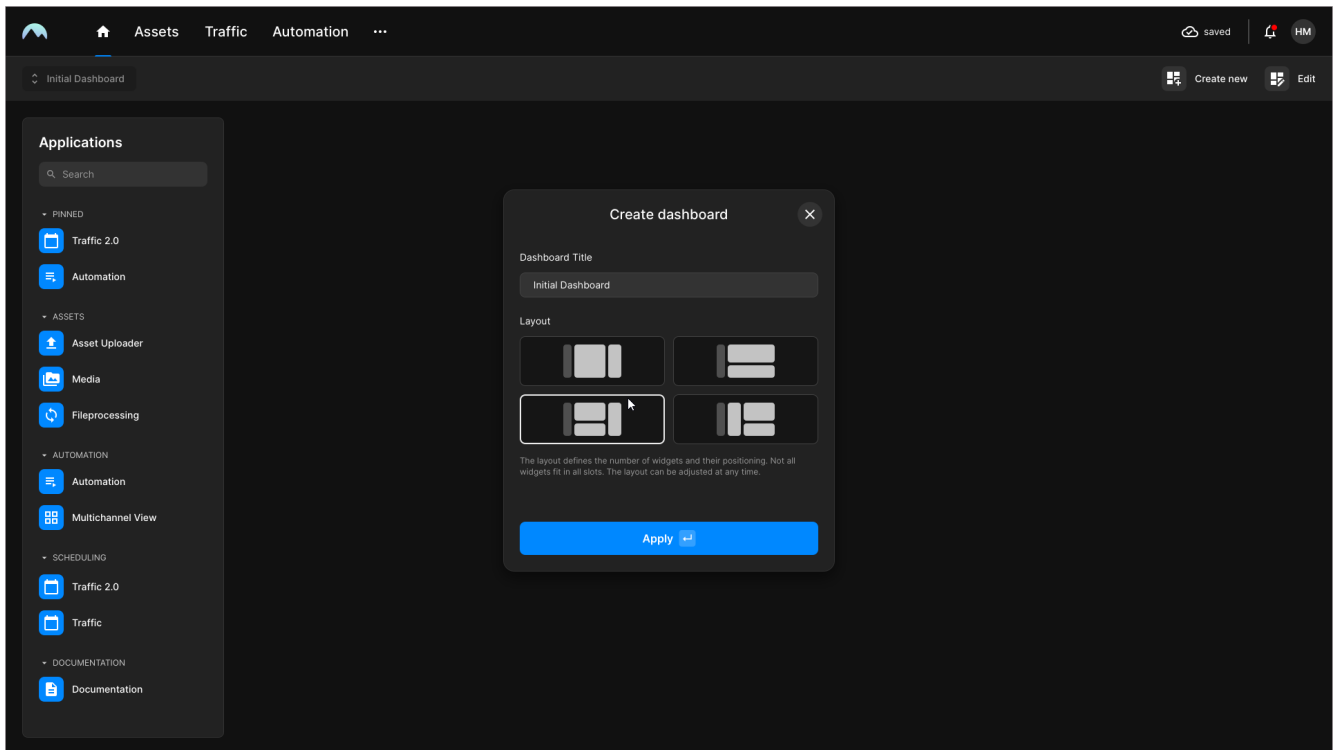
## Creating and configuring a custom dashboard

To create a custom dashboard, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. Depending on if you have already created a dashboard, proceed as follows:
  - a. If you have already created a dashboard, your default dashboard is displayed. To create a new dashboard, click **Create new** at the top right.

- b. If you have not yet created a dashboard, the **Create dashboard** menu is displayed automatically.

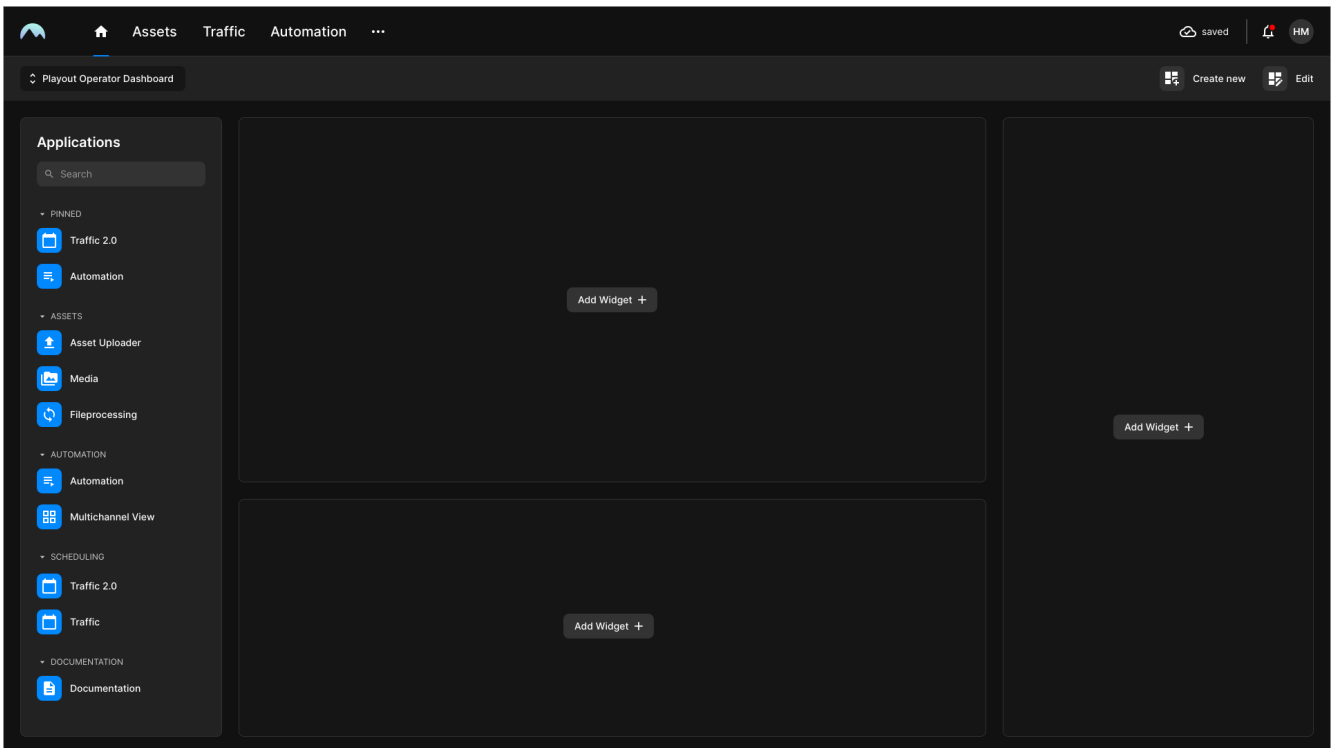
The **Create dashboard** menu opens.



*Hub - Create dashboard menu*

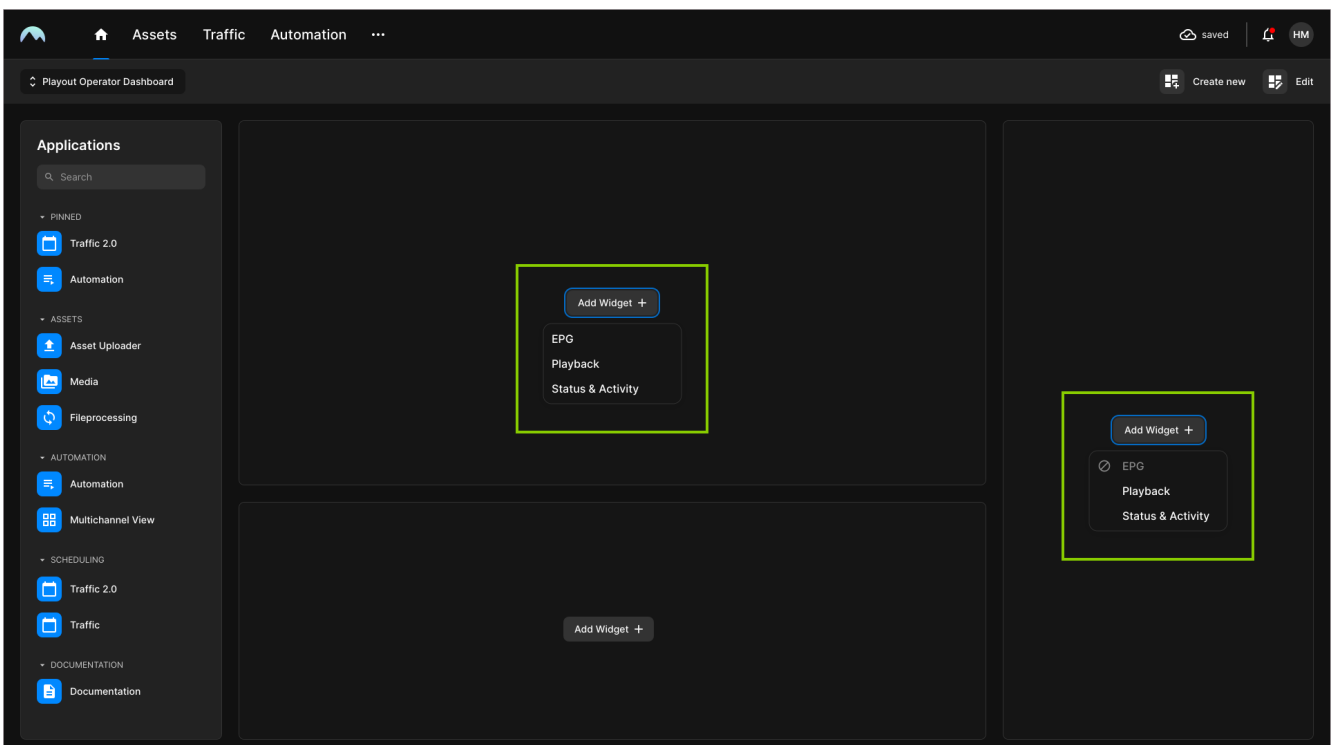
3. Set the basic dashboard properties, by entering a **Dashboard Title**, and selecting a **Layout**.
4. Click **Apply**.

*The dashboard is created and displayed with empty widget areas based on your selected layout.*



Hub - Newly created dashboard with empty widget areas

5. Add a widget to one of the available empty areas, by clicking **Add Widget** and selecting the widget to add.



Hub - Add widget to empty area

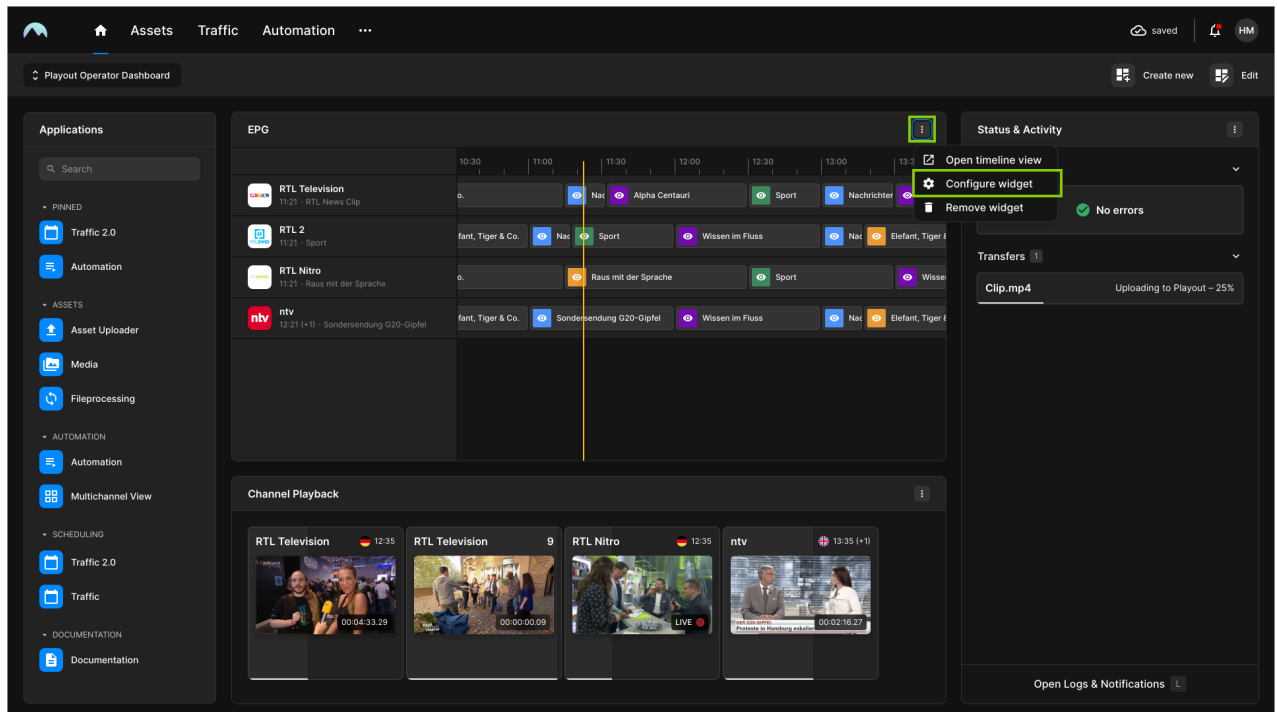
### i Notice

Not all widgets are available in every layout area. Only widgets that fit the corresponding area are available (for example, the **EPG** widget cannot be displayed in a narrow column).

*The selected widget is added to the selected area.*

6. Edit the widget settings as follows:

- a. Click the **Options** icon  at the top right of the widget and select **Configure widget**.



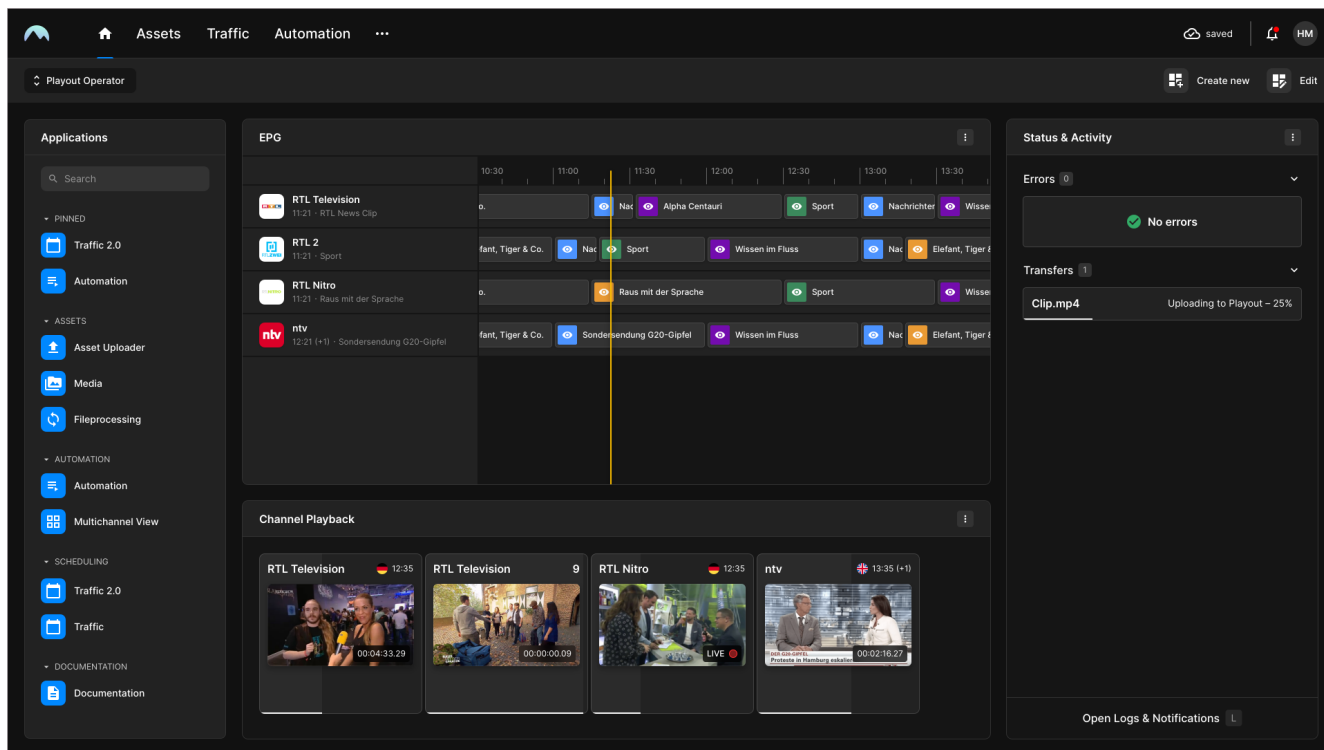
*Hub - Configure widget*

*The **Configure widget** menu opens.*

- b. Change the widget properties as required.
- c. Click **Apply**.

*The widget is configured.*

7. To add widgets to the other available empty areas, repeat steps five and six.

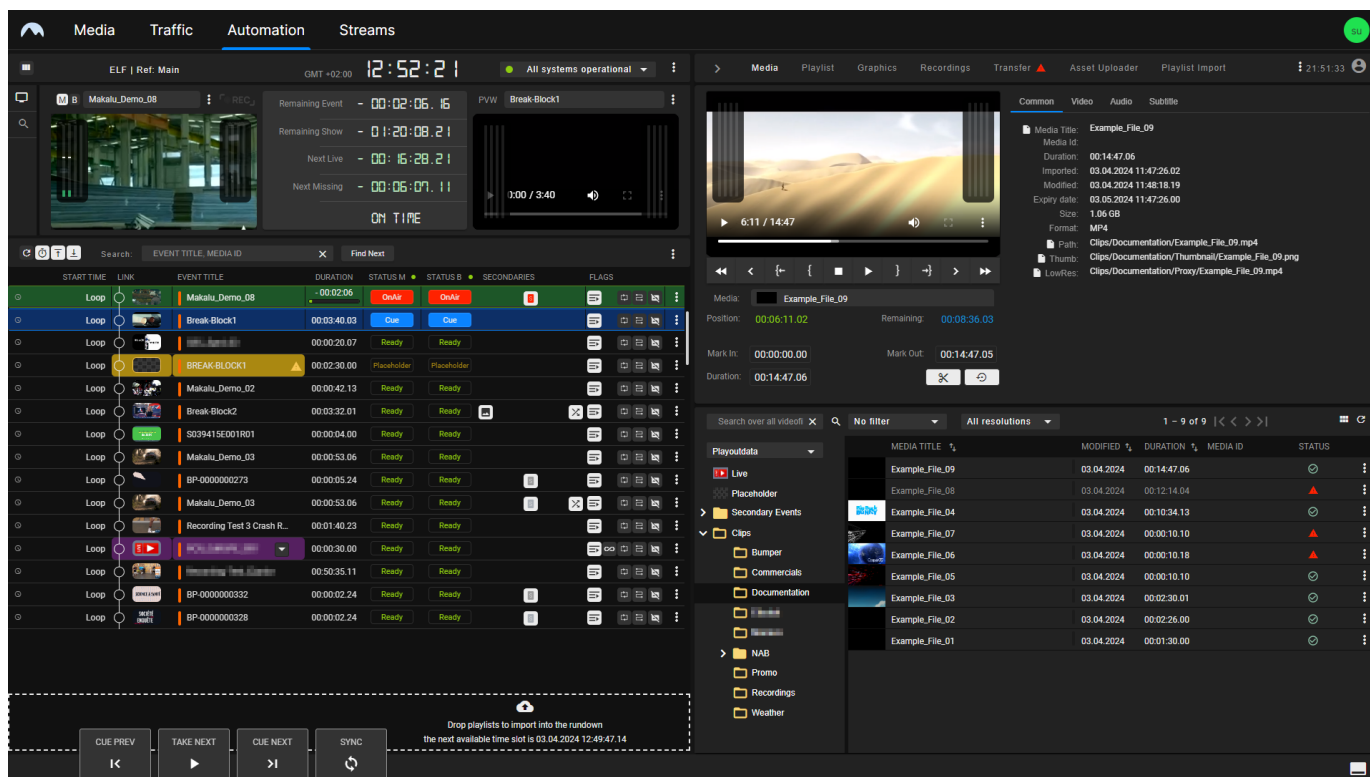


*Hub - Dashboard with added and configured widgets*

*The newly created dashboard is configured and can be used.*

## 1.4.4 Makalu UI

When you open a Makalu system app via the Makalu Hub it is usually opened in the corresponding tab of the Makalu UI, which combines multiple Makalu apps into a single UI.



Makalu UI


It consists of multiple tabs, that provide access to the functional areas of Makalu. Some tabs may also provide a secondary navigation that is displayed below when you hover your mouse over the corresponding tab.

The main navigation consists of the following tabs:

Element/tab	Functional area	Included secondary navigation	Described in section
Media	Ingest	Asset Uploader, Asset Viewer, File Processing	<a href="#">Ingest</a>
Traffic	Schedule		<a href="#">Traffic</a>
Automation	Playout		Automation: <ul style="list-style-type: none"> <li>• <a href="#">Overview</a></li> <li>• <a href="#">Multichannel view</a></li> <li>• <a href="#">Detailed channel view</a></li> </ul>
Streams	Ingest/Distribution		<a href="#">Live sources and stream targets</a>



 **Tip**

To return to the Makalu Hub dashboard, regardless of which Makalu app is currently opened, click the **Home** icon  at the top left.

## 2. How to use Makalu

### 2.1 Ingest

The purpose of the ingest workflow is to provide new media files to the playout. In the first step, each new file must be uploaded to the central ingest storage. After each successful upload, the corresponding file is automatically processed by Makalu (for more information, see section [File processing](#)). When this internal file processing is completed, the uploaded file is registered in Makalu and can be scheduled for playout. In the final step, each scheduled file (added to the rundown as part of a show in a playlist) is automatically transferred from the central ingest storage to the local playout storage. For more information, see section [File transfer](#).

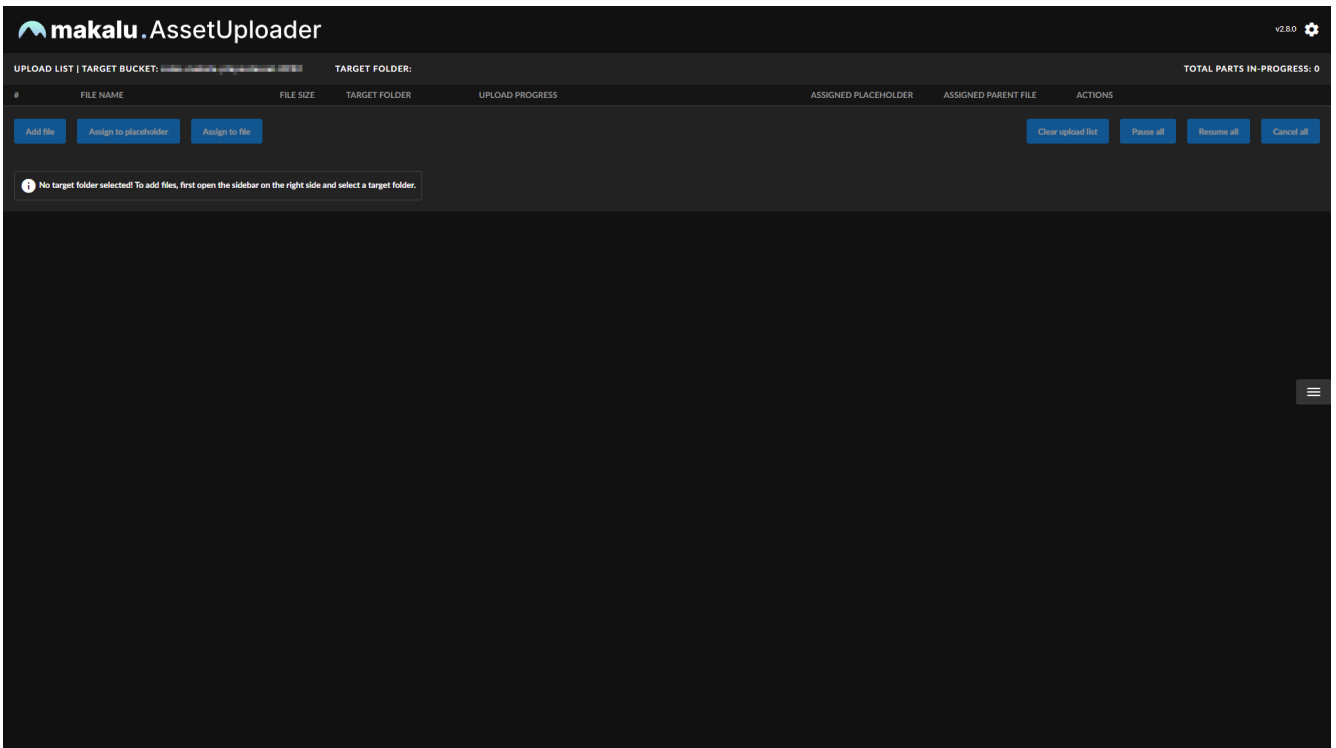
#### 2.1.1 Uploading files

The ingest process starts with the file upload. For this purpose, Makalu includes the Asset Uploader app. With Makalu Asset Uploader you can either upload a new file to the system, which creates a completely new media asset or you can assign the file to be uploaded to a placeholder asset that already exists in the system. A placeholder is a virtual element that can be used to schedule a file for playout that is not yet available, for example, because the physical file has not yet been created. By using this concept, playlists can already be prepared via the planning component Makalu Traffic (for more information, see section [Schedule](#)), even if the actual files used in it are created later. As a result, the uploaded file replaces the selected placeholder everywhere it is used in the system.


To upload a file, proceed as follows:

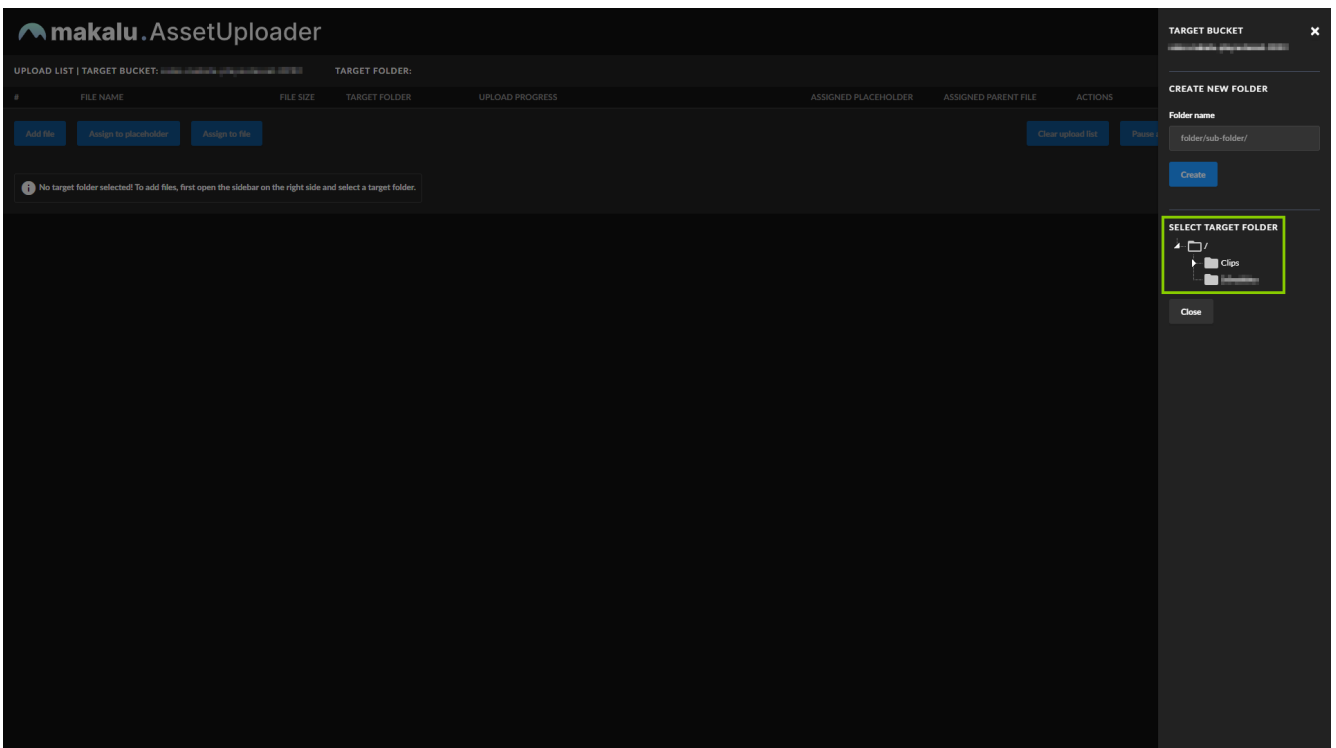
1. Open **Makalu Asset Uploader** by either:
  - a. Opening the [Makalu Automation detailed channel view](#) and selecting the **Asset Uploader** tab or by
  - b. Opening the Makalu Asset Uploader via the [Makalu Hub](#).

*The Asset Uploader UI is opened.*



*Asset Uploader - UI*

2. Click the **Menu** icon  on the right side to open the sidebar and select the folder on the ingest storage to be used as the target for your upload.



*Asset Uploader - Selecting the target folder*

*The folder is selected, and the sidebar is closed. The name of the selected folder is displayed above the upload list.*

### Tip

You can also create a new folder by using the **Create new folder** area in the target folder sidebar.

When creating a new folder, the following restrictions apply to the folder name:

- Do not use a leading slash but append a closing slash:
  - Valid example: `folder/subfolder/`
  - Invalid example: `/folder/subfolder`
- Use only permitted characters, letters, and folder names:
  - Permitted characters are letters ( `a-z` , `A-Z` ), numbers ( `0-9` ), hyphen ( `-` ), and underscore ( `_` )
  - Not permitted (system-reserved) top-level folder names are `Live` , `live` , `Placeholder` , and `placeholder`

To create a new folder, proceed as follows:

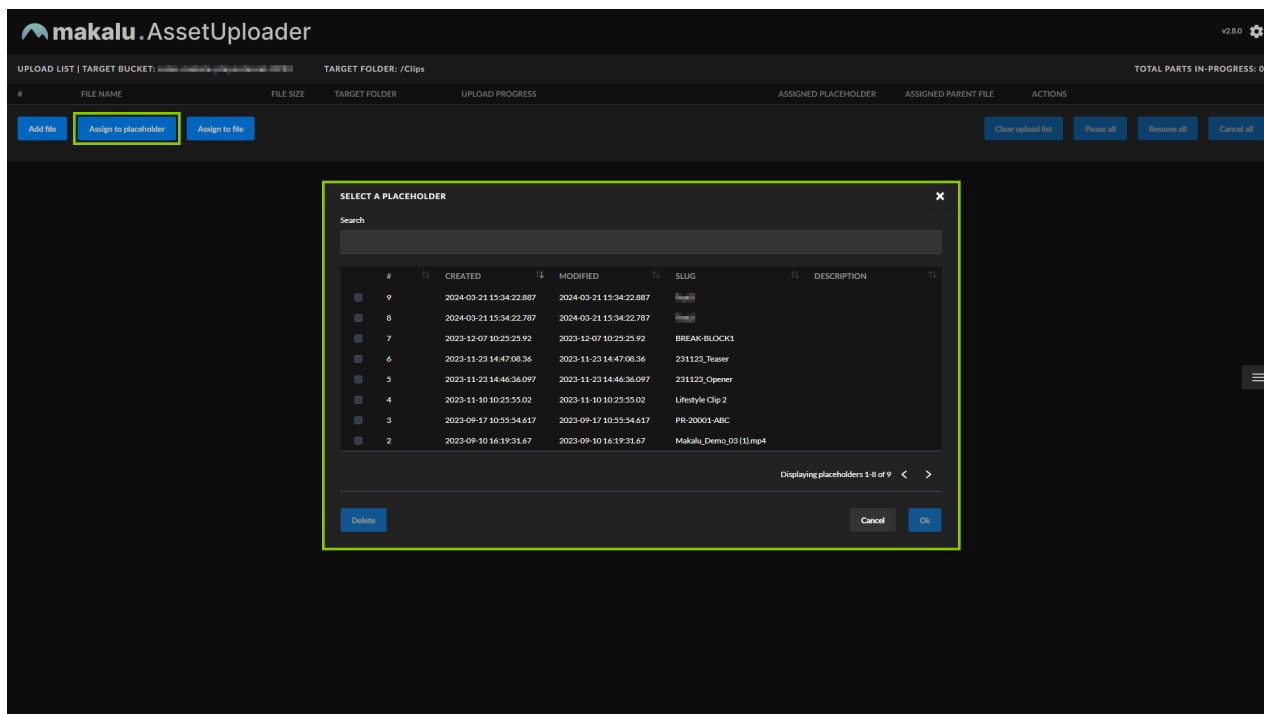
- a. Enter a valid name for the new folder in the **Folder name** field.
- b. To create the folder, click **Create**.

*The folder list is updated and you can select the newly created folder as the target.*

3. (Optional) If you want to assign the file to be uploaded to an already existing placeholder asset, select a placeholder as follows:

- a. Click **Assign to placeholder**.

*A list of available placeholders is displayed.*

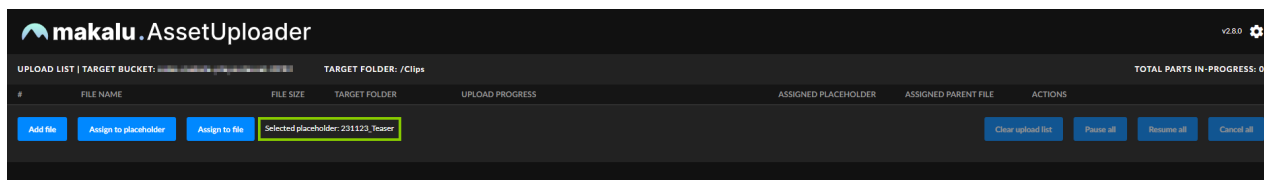


*Asset Uploader - List of available placeholders*

- b. Use the **Search** field and/or the paging buttons to search for a specific placeholder.
- c. Select a placeholder.

- d. Click **Ok**.

The list of placeholders is closed, and the name of the selected placeholder is displayed to the right of the **Assign to file** button.



Asset Uploader - Placeholder selected

4. To select the file to be uploaded, click **Add file**.

The file selection window opens.

5. In the file selection window select one or more files and click **Open**.

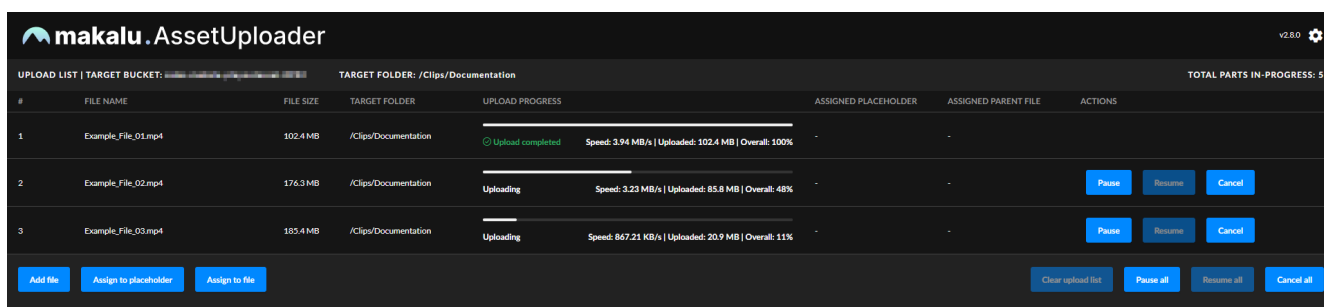
#### **Notice**

If you selected a placeholder (to assign the uploaded file to) as described in the optional step three, you can only select a single file. If no placeholder is selected, you can select multiple files.

#### **Notice**

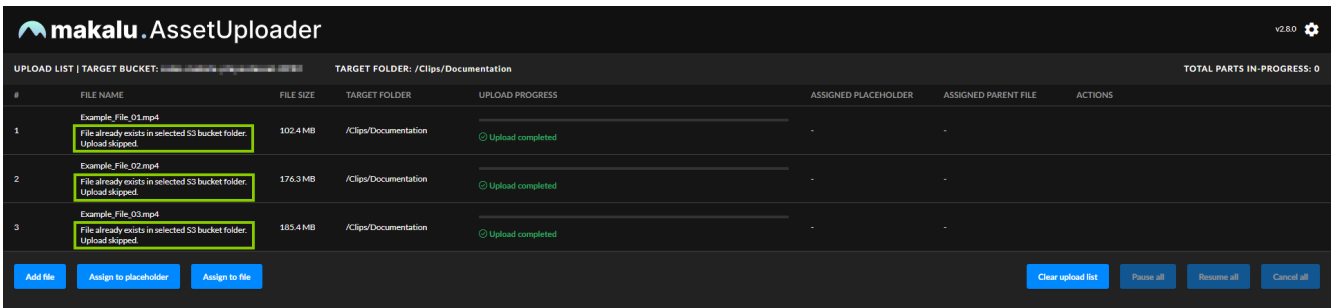
Depending on how the Makalu Asset Uploader is configured, only permitted file types can be selected and uploaded. It is possible to allow any file type or to restrict the permitted file types (for example, MP4 files only). In this case, only files of this type are displayed in the selection window.

The selected files are added to the upload list and the upload starts automatically.



Asset Uploader - Upload started

Asset Uploader provides an optional feature, that (if enabled) checks if a file to be uploaded already exists in the selected target folder. It can be used to avoid uploading the same file and overwriting it unnecessarily although the file was not changed. In this case, the selected file is not uploaded and a corresponding notice is displayed. The check can also be extended to only allow overwriting an existing file if its modification date has exceeded a certain age.



*Asset Uploader - Upload prevented because the file already exists*

### **i** Notice

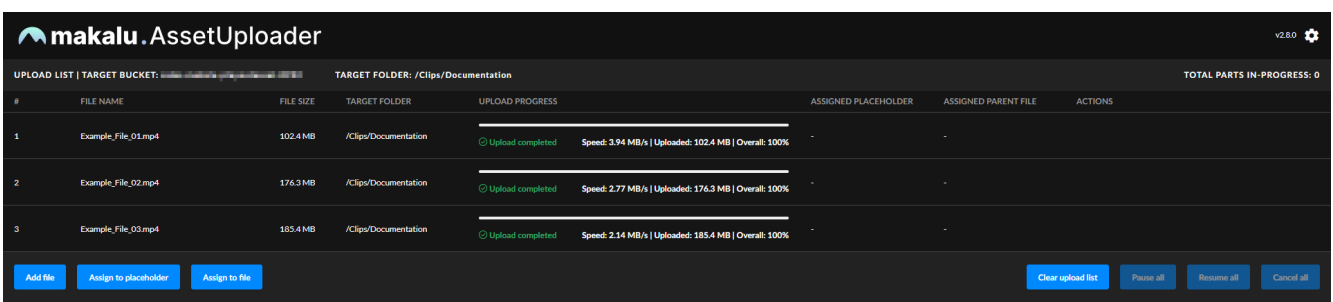
During the upload process the progress of each upload is displayed, including current upload speed, amount of uploaded data, and overall upload percentage. At the top right the number of file parts ("chunks") currently being uploaded is displayed. The upload speed is not limited. Asset Uploader will use the full upload bandwidth currently available on the client side.

### **i** Notice

While uploads are in progress, you can either pause, resume, or cancel individual or all uploads via the corresponding buttons on the right side in the **Actions** column and below the upload list.

### **!** Warning

Do not close your browser while uploads are in progress! Otherwise, your current upload progress will be lost.



*Asset Uploader - Upload completed*

After the file upload has been completed, the file processing starts automatically.

## 2.1.2 File processing

After each successful upload, the internal file processing is automatically triggered. When the file processing is completed, the uploaded files are registered in Makalu and can be scheduled for playout.

File processing includes the following sub-processes:

Sub-process	Purpose	Input (uploaded) file format	Output file format
Creating a low-res (proxy) video file  <i><b>Notice:</b> This is only necessary if original files are uploaded in a format other than MP4.</i>	Web-based preview of the video file	MXF or any other supported source video format	MP4
Creating a thumbnail image	Display the image in the UI	Created from the uploaded source video file	PNG
Creating a proxy subtitle file  <i><b>Notice:</b> This is only necessary if matching subtitles are uploaded for the original video file.</i>	Web-based preview of the video file including subtitles	SRT, STL, TTML	VTT
Determining technical metadata	Optimized internal file processing and displaying file information in the UI	Created from the uploaded source files	-
Creating a checksum for original and proxy files	Check if files were correctly transferred from ingest storage to playout nodes	-	-

For more information, see sections [Transfer](#) and [File processing](#).

### 2.1.3 Previewing uploaded files

For previewing uploaded files, Makalu includes the Asset Viewer app. It lists all uploaded and processed video files (assets) according to the directory structure in which they were uploaded and registered in Makalu. Asset Viewer provides a preview for playable assets (incl. subtitles) in the **Content** tab and an overview of all available technical metadata of the asset in the **Metadata** tab, with the option to download the corresponding original file. Additionally, it also lists placeholder assets with basic metadata and the option to delete them.

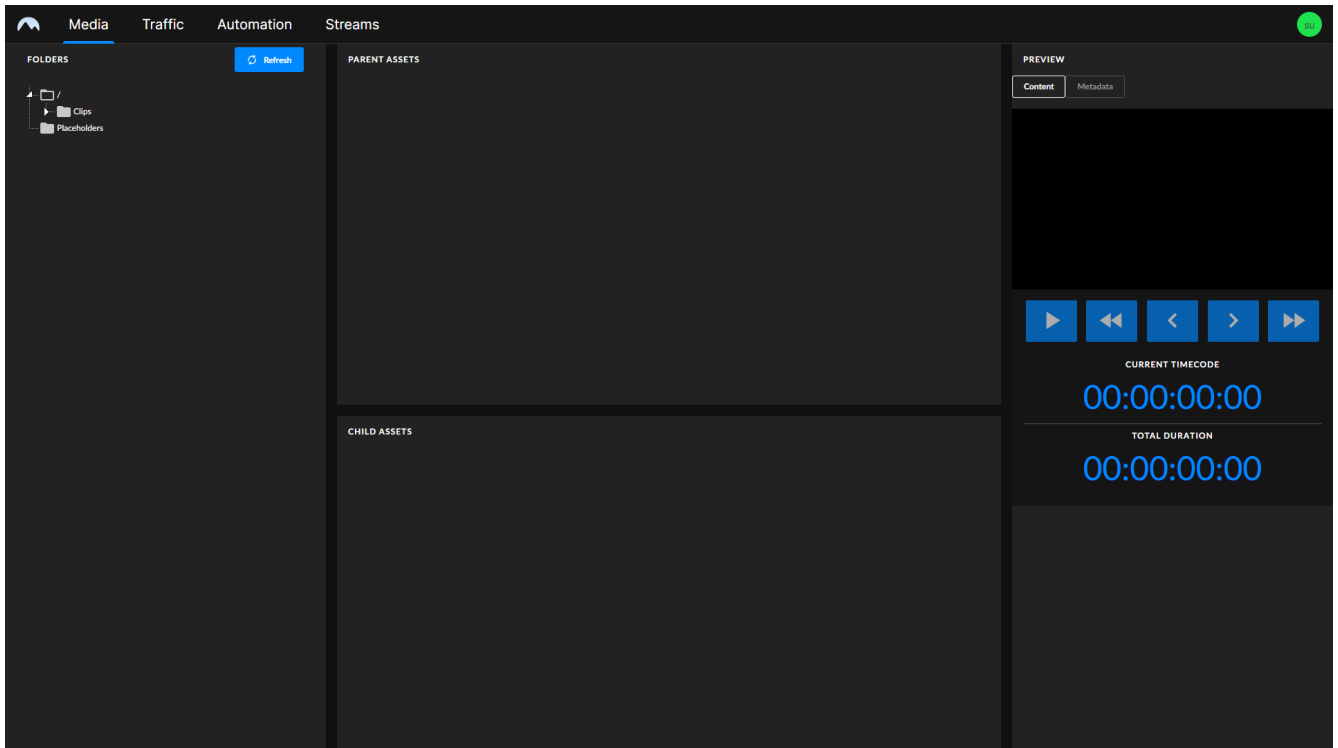
#### Tip

You can also preview files via the [Makalu Automation detailed channel view](#).

To preview uploaded and processed files, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the app list in the left column, in section **Assets** select **Media**.

*The Asset Viewer is opened in the **Media** tab of the Makalu UI.*

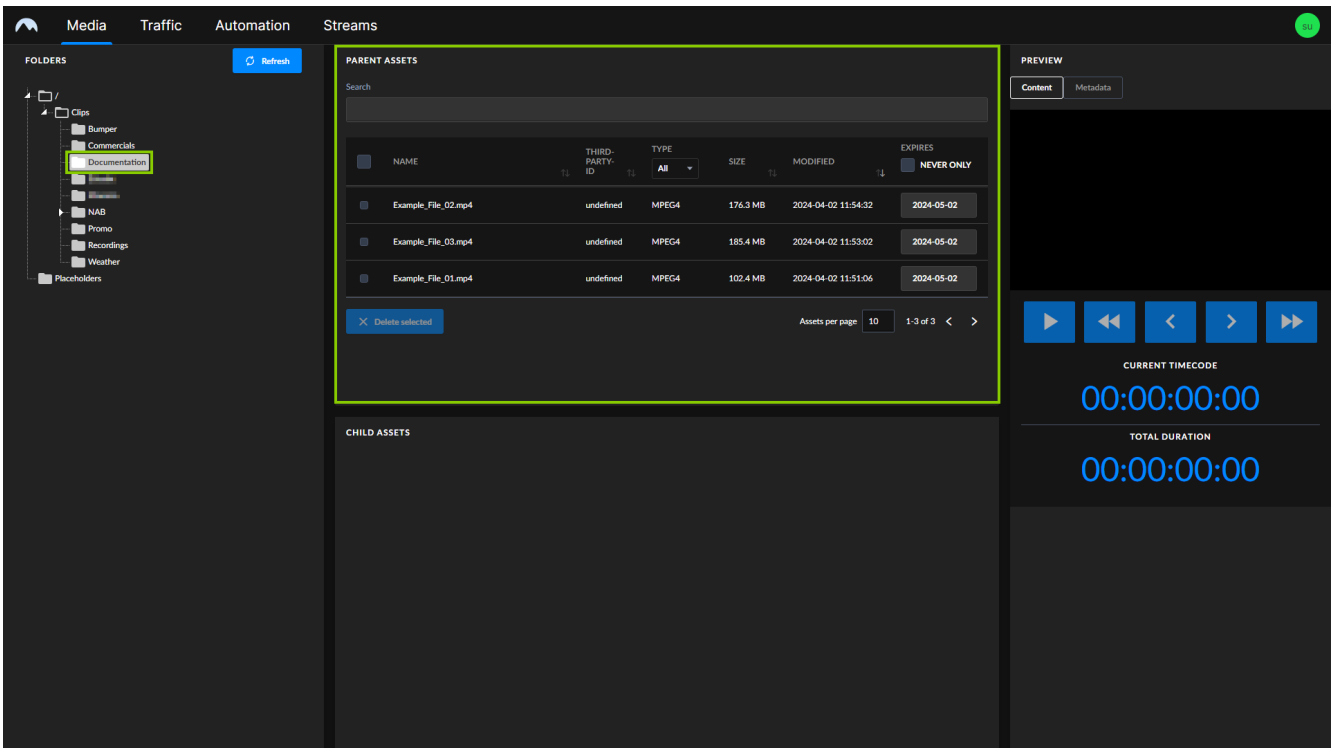


*Asset Viewer - UI*

3. Use the folder tree on the left side to select the folder that contains the file to be previewed.

*All video files included in the selected folder are listed in the **Parent Assets** area.*

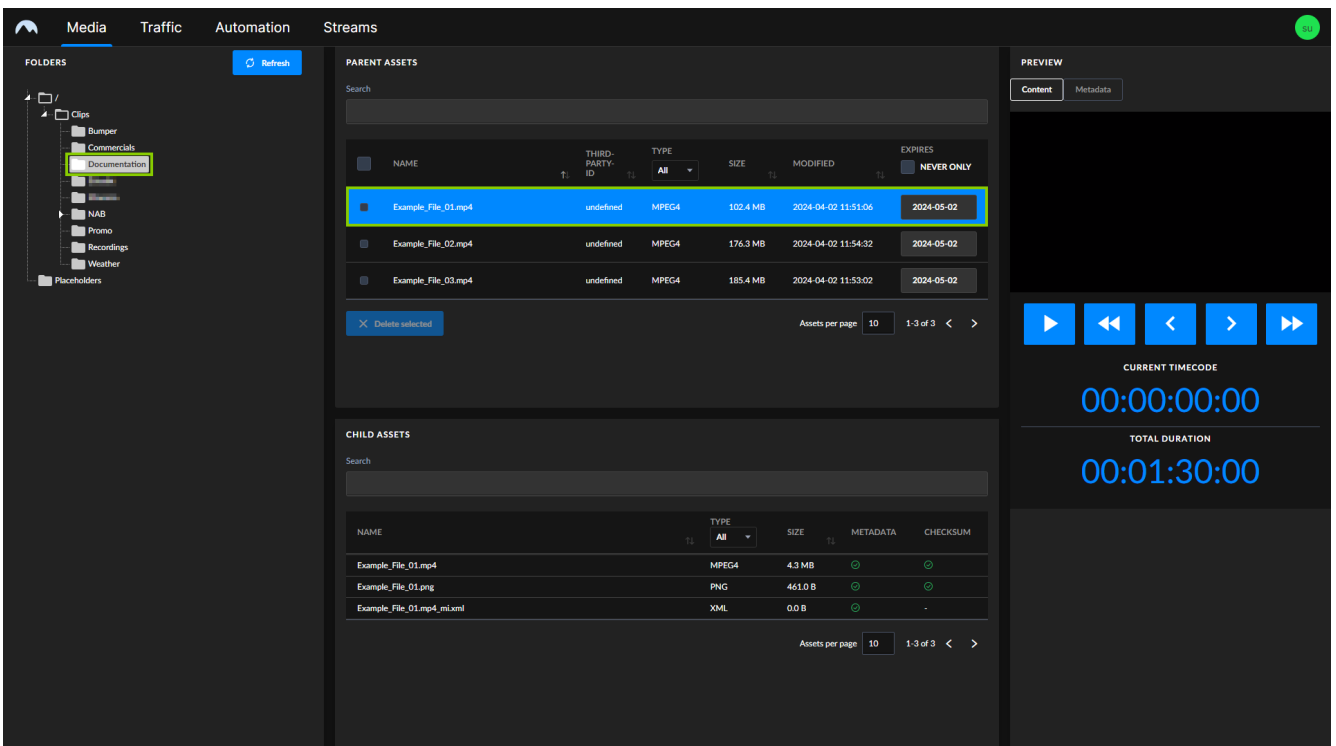




Asset Viewer - Folder selected

4. Select the file to be previewed from the **Parent Assets** list.

The selected file is opened in the preview player on the right side. Corresponding files are listed below in the **Child Assets** area.



Asset Viewer - File selected

5. Use the player controls to preview the file.

The preview playback is started.

The screenshot displays the Asset Viewer interface. On the left, a 'FOLDERS' sidebar shows a tree structure with 'Documentation' highlighted. The main area is divided into 'PARENT ASSETS' and 'CHILD ASSETS' sections. The 'PARENT ASSETS' table lists three files, with the first one selected. The 'CHILD ASSETS' table shows three associated files. On the right, a 'PREVIEW' section shows a video player with a play button, volume, and speed controls. Below the player, the 'CURRENT TIMECODE' is 00:01:06:12 and the 'TOTAL DURATION' is 00:01:30:00.

NAME	THIRD-PARTY-ID	TYPE	SIZE	MODIFIED	EXPIRES
Example_File_01.mp4	undefined	MPEG4	102.4 MB	2024-04-02 11:51:06	2024-05-02
Example_File_02.mp4	undefined	MPEG4	176.3 MB	2024-04-02 11:54:32	2024-05-02
Example_File_03.mp4	undefined	MPEG4	185.4 MB	2024-04-02 11:53:02	2024-05-02

NAME	TYPE	SIZE	METADATA	CHECKSUM
Example_File_01.mp4	MPEG4	4.3 MB	⊙	⊙
Example_File_01.png	PNG	461.0 B	⊙	⊙
Example_File_01.mp4_mi.xml	XML	0.0 B	⊙	-

Asset Viewer - Preview a file

### Tip

If subtitles were uploaded for the selected file, a **CC** icon is displayed in the player controls. To select the subtitle language to be used in the preview or to enable/disable the subtitle display, click the **CC** icon and select the corresponding option.

## 2.1.4 Housekeeping

Within the scope of storage/file housekeeping, Makalu provides two workflows for deleting files that are no longer needed: automatic and manual housekeeping.

Both workflows include the following steps:

1. Removing the file internally from the Makalu system by removing all corresponding database entries
2. Deleting the file from the central ingest storage
3. Deleting the file from local storage on playout nodes

### Automatic housekeeping

Automatic housekeeping deletes files on the central ingest storage automatically based on their expiry date and files on the local playout node storage based on their aging date. These time periods are configured globally and the actual expiry date is calculated individually for each uploaded file based on these settings. When the expiry date is reached, a configurable grace period starts. After the end of this period, the corresponding file is automatically deleted the next time the housekeeping process is executed.

It is possible to configure protected folders, that are excluded from housekeeping. Files uploaded to these folders are never automatically deleted, even if the global expiry date is reached.

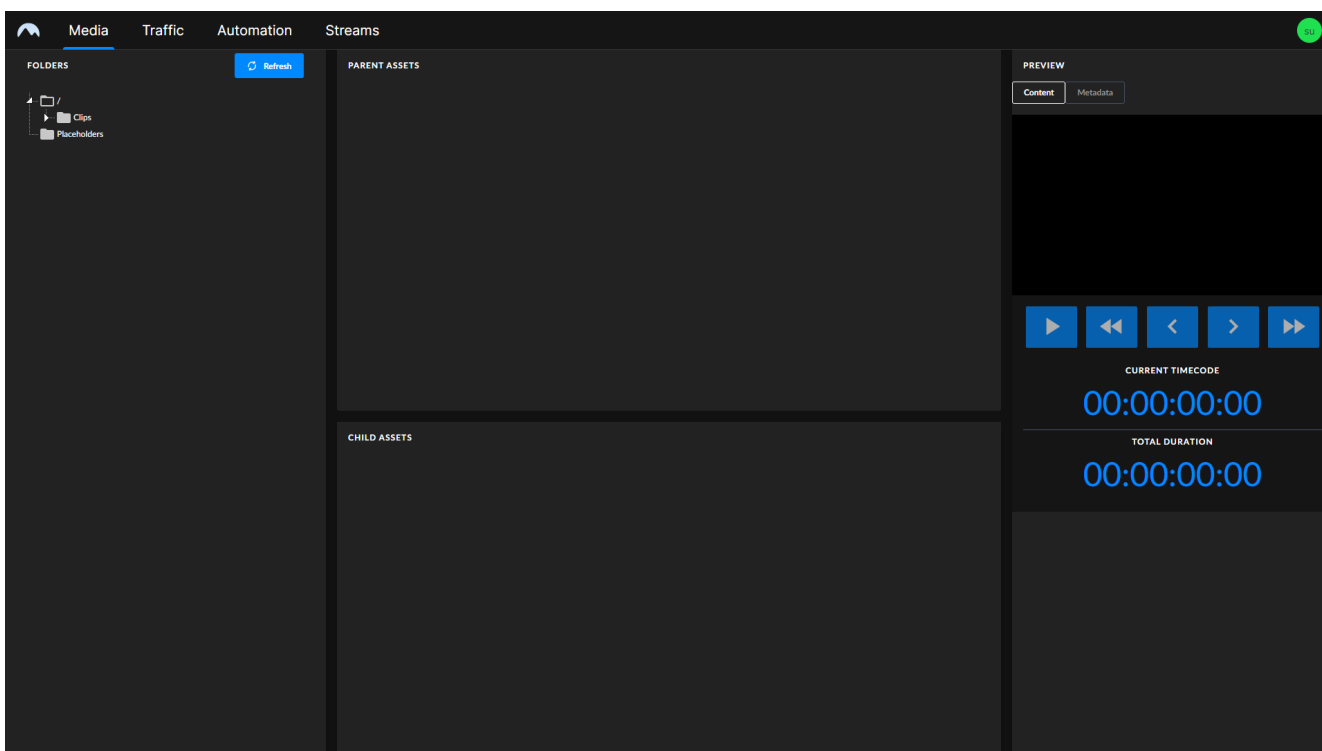
### Manual housekeeping

Manual housekeeping allows you to delete uploaded files at any time (regardless of the global expiry date) via Makalu Asset Viewer.

To delete a file manually, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the app list in the left column, in section **Assets** select **Media**.

*The Asset Viewer is opened in the **Media** tab of the Makalu UI.*



*Asset Viewer - UI*

3. Use the folder tree on the left side to select the folder that contains the file to be deleted.

*All video files included in the selected folder are listed in the **Parent Assets** area.*

The screenshot shows the 'Asset Viewer' interface with the 'Media' tab selected. In the 'FOLDERS' sidebar, the 'Documentation' folder is highlighted. The main area displays the 'PARENT ASSETS' table:

NAME	THIRD-PARTY-ID	TYPE	SIZE	MODIFIED	EXPIRES
Example_File_02.mp4	undefined	MPEG4	176.3 MB	2024-04-02 11:54:32	2024-05-02
Example_File_03.mp4	undefined	MPEG4	185.4 MB	2024-04-02 11:53:02	2024-05-02
Example_File_01.mp4	undefined	MPEG4	102.4 MB	2024-04-02 11:51:06	2024-05-02

Below the table is a 'Delete selected' button and a pagination indicator showing 'Assets per page 10' and '1-3 of 3'.

Asset Viewer - Folder selected

- Select one or more files to be deleted from the **Parent Assets** list.
- Click **Delete selected**.

The screenshot shows the 'Asset Viewer' interface with the 'Parent Assets' table. The file 'Example\_File\_03.mp4' is selected, and the 'Delete selected' button is highlighted. Below the 'Parent Assets' table is the 'CHILD ASSETS' table:

NAME	TYPE	SIZE	METADATA	CHECKSUM
Example_File_03.mp4	MPEG4	12.1 MB	⊙	⊙
Example_File_03.png	PNG	52.4 KB	⊙	⊙
Example_File_03.mp4_msi.xml	XML	0.0 B	⊙	-

The 'Delete selected' button is highlighted in blue. The pagination indicator shows 'Assets per page 10' and '1-3 of 3'.

Asset Viewer - Delete files

- Confirm the dialog by clicking **Delete**.

The selected files are deleted.

Instead of deleting a file immediately, you can also set the expiry date manually. As a result, the file is deleted at a later time when the expiry date and grace period have expired.

To set the expiry date manually, proceed as follows:

1. Repeat steps one to three as described under [Manual housekeeping](#).
2. In the **Parent Assets** list click the expiry date of the corresponding file in the **Expires** column.

A date picker is displayed.

The screenshot shows the 'Asset Viewer' interface. On the left is a 'FOLDERS' tree with 'Documentation' highlighted. The main area is 'PARENT ASSETS' with a table:

NAME	THIRD-PARTY-ID	TYPE	SIZE	MODIFIED	EXPIRES
Example_File_01.mp4	undefined	MPEG4	102.4 MB	2024-04-02 11:51:06	2024-05-02
Example_File_02.mp4	undefined	MPEG4	176.3 MB	2024-04-02 11:54:32	2024-05-02
Example_File_03.mp4	undefined	MPEG4	185.4 MB	2024-04-02 11:53:02	2024-05-02

A date picker is open over the '2024-05-02' date in the 'Expires' column. The date picker shows 'April 2024' and a calendar grid with the 2nd highlighted. Below the calendar is a 'Never' button. To the right of the table are playback controls and 'CURRENT TIMECODE' and 'TOTAL DURATION' both showing '00:00:00:00'.

Asset Viewer - Set the expiry date of a file manually

3. Select the new expiry date.

The expiry date is updated.

The screenshot displays the 'Asset Viewer' interface. On the left, a 'FOLDERS' sidebar shows a tree structure with 'Documentation' highlighted. The main area is titled 'PARENT ASSETS' and contains a table with the following columns: NAME, THIRD-PARTY ID, TYPE, SIZE, MODIFIED, and EXPIRES. The 'EXPIRES' column has a 'NEVER ONLY' checkbox. Three rows of assets are shown, with the third row's expiry date '2024-04-30' highlighted in green. Below the table is a 'Delete selected' button and a pagination control showing 'Assets per page: 10' and '1-3 of 3'. On the right, a 'PREVIEW' panel shows 'Content' and 'Metadata' tabs, playback controls, and timecode displays for 'CURRENT TIMECODE' and 'TOTAL DURATION', both showing '00:00:00:00'.

NAME	THIRD-PARTY ID	TYPE	SIZE	MODIFIED	EXPIRES
Example_File_01.mp4	undefined	MPEG4	102.4 MB	2024-04-02 11:51:06	2024-05-02
Example_File_02.mp4	undefined	MPEG4	176.3 MB	2024-04-02 11:54:32	2024-05-02
Example_File_03.mp4	undefined	MPEG4	185.4 MB	2024-04-02 11:53:02	2024-04-30

Asset Viewer - File expiry date set manually

#### Tip

Alternatively, you can prevent a file from being deleted by automatic housekeeping. To do this, set the expiry date to **Never**, by clicking the button of the same name in the date picker.

## 2.2 Graphics

### 2.2.1 Basic information

Makalu uses the [Singular.Live graphics platform](#) for graphic overlays. Graphics are managed via the Singular.Live dashboard and are automatically synchronized with Makalu.

Graphics can be triggered via Makalu in the following ways:

1. Trigger graphics manually via the [Graphics tab in Makalu Automation](#).
2. Trigger scheduled/time-controlled graphics automatically based on the current rundown, for example, by using playlists created via [Makalu Traffic](#).

Singular.Live graphics are organized based on projects. Each project can include one or more compositions that can be considered master templates. Each composition consists of sub-compositions (the actual graphics to be displayed) that can be assigned to and controlled via control apps. Control apps allow manual triggering of graphics.

#### Notice

Each control app can be assigned to one Makalu channel.

#### Warning

Each control app has a unique output URL that is used in [Makalu Automation](#) to display the corresponding graphic overlays. Output URLs are configured during the commissioning of the system and are used by multiple Makalu apps.

Do not change these URLs in the Singular.Live settings! Misconfigurations can lead to graphics not being displayed correctly by Makalu Automation.

#### Notice

If you have multiple linear playout channels and want to use one preview output per channel, at least two control apps must be created for each channel (one for the channel's main on-air output and one for its preview output).

#### Tip

You can find a Singular.Live beginner's guide in [this video](#) and a quick tutorial about how to build your own graphics in [this video](#).

For detailed information about creating and managing Singular.Live graphics refer to the [Singular.Live Support](#).

## 2.2.2 Graphics synchronization between Singular.Live and Makalu

The synchronization of graphics between Singular.Live and Makalu ensures that all the graphic overlays created in Singular.Live are also available in Makalu and can be scheduled in a rundown. This synchronization process takes place automatically at a regular interval, which is configurable and usually set between 10 and 30 minutes.

If you create new or edit existing graphics via the Singular.Live dashboard, they must first be synchronized with Makalu, before you can use them, for example, in a playlist and schedule them in a rundown. It may take a few minutes until these changes are synchronized and become available in Makalu.

### Warning

If you delete graphics via the Singular.Live dashboard, which are still used in a Makalu playlist, the graphics cannot be triggered and displayed anymore by Makalu.



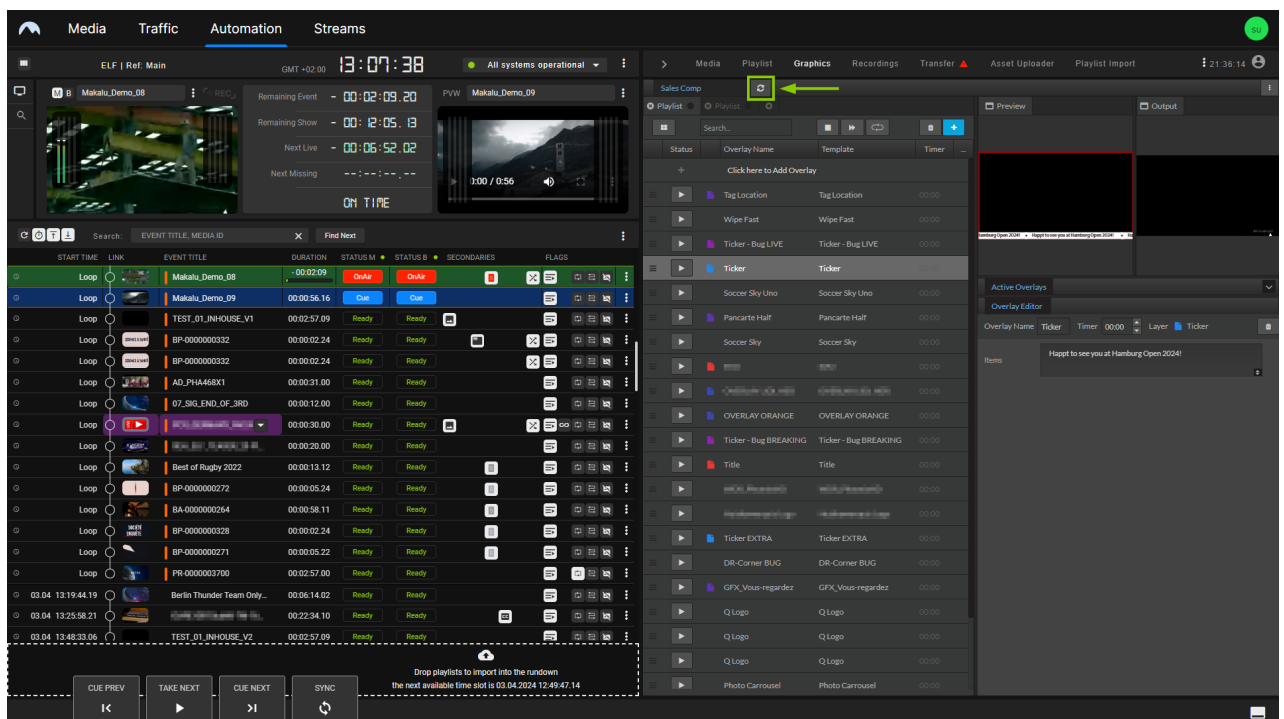
### Warning

Every time you edit a Singular.Live composition you must manually refresh the corresponding Singular.Live control app. Otherwise, your changes are not available in the control app and cannot be synchronized with Makalu. Note that as part of this refresh, all currently displayed graphics are stopped and must afterward manually be restarted again.

You can either trigger the manual refresh via the Singular.Live website or via the [Graphics tab in the Makalu Automation detailed channel view](#).

To refresh a Singular.Live control app, proceed as follows:

1. Click **Refresh Composition** in the top left of the corresponding control app.



Automation - Trigger a Singular.Live control app refresh manually

2. Confirm the dialog, by clicking **OK**.

All currently displayed graphics are stopped and the control app is refreshed. Afterward, the latest composition data is available in the control app.

## 2.2.3 Triggering graphics manually

To trigger Singular.Live graphic overlays manually, proceed as follows:

### **i** Notice

The following steps one to three are only necessary if you are logging in to Singular.Live for the first time or if you later want to edit your graphic overlays.

If you instead want to trigger graphic overlays manually via Makalu Automation, you can skip steps one to three, open the [Graphics tab in Makalu Automation](#), and continue with step four.

1. Open the [Singular.Live website](#) and click **Login**.

*The Singular.Live sign-in page is opened.*

2. Enter your credentials and sign in.

### **i** Notice

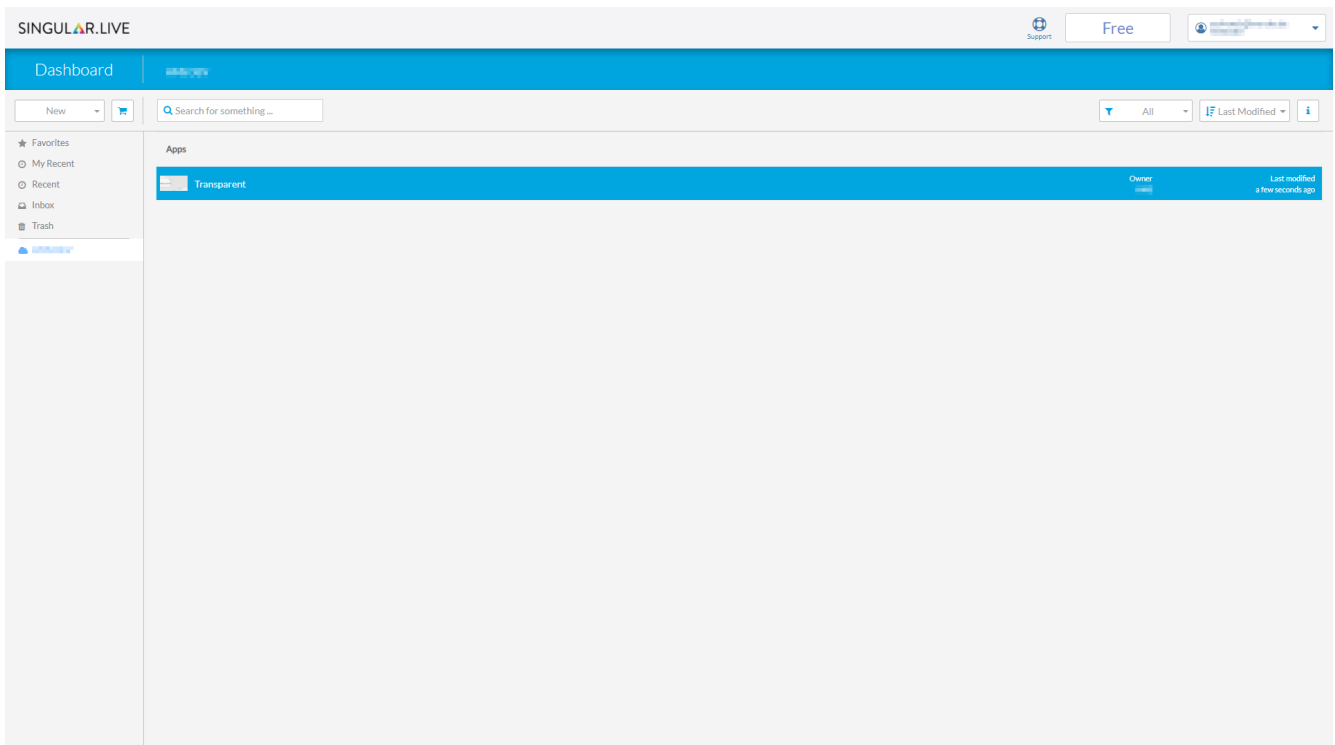
If you successfully sign in for the first time the Singular.Live marketplace is displayed. There you can select and download default templates to try out and get familiar with Singular.Live.

To download a template click the corresponding item and then **Download**.

*The template is added to your apps.*

Afterward, close the marketplace.

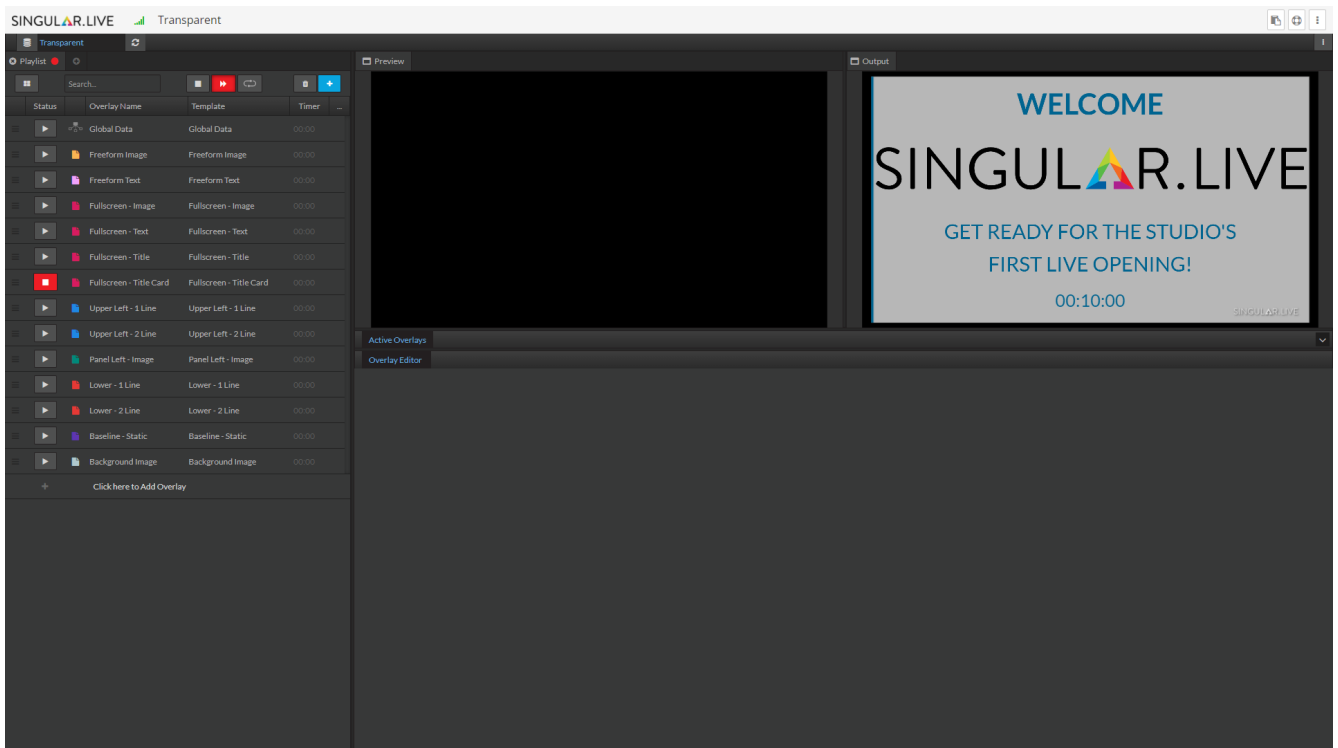
*The Singular.Live Dashboard is displayed.*



*Singular.Live Dashboard*

3. To open the control app of your template, **double-click** the corresponding item in the **Apps** list.



*The control app is displayed.*



*Singular.Live control app*

### Tip

This is the same view that is also available in the [Graphics tab in Makalu Automation](#). If you want to trigger graphics manually via Makalu Automation, you can use this tab instead of opening the Singular.Live website separately.

4. Select a graphic overlay in the list on the left side.  
*The selected item is opened in the preview on the right side and its properties are displayed below.*
5. (Optional) Use the Overlay Editor on the right side to edit the properties.
6. Use the controls on the left side to trigger graphic overlays.
7. To start a graphic overlay click the **Overlay In** (play) icon .
8. To stop a graphic overlay click the **Overlay Out** (stop) icon .

*The graphic overlays are triggered and displayed in the corresponding Makalu channel output.*

## 2.3 Schedule

### 2.3.1 Schedule

#### Overview

Makalu Traffic is the planning/scheduling component included in Makalu. It is used for creating and managing playlists for Makalu playout channels.

#### **i** Info

The file-based import of playlists is available via the detailed channel view of the Makalu Automation UI. For more information, see section [Importing a playlist](#).

The planning concept of Makalu is based on playlists, shows, and clips. Makalu Traffic enables the navigation descending from playlist to clip level and back again.

The following table summarizes the characteristics of these and other elements that are used in the planning concept:

Element	Characteristics
Asset ("Media item/element")	<ul style="list-style-type: none"> <li>• each uploaded physical media file for which file processing and ingest have been fully completed</li> <li>• virtual placeholders for video files</li> </ul>
Primary event ("Primaries")	<ul style="list-style-type: none"> <li>• main component of a show</li> <li>• types: <ul style="list-style-type: none"> <li>• a video file (asset) added to a show (turning it into a "clip")</li> <li>• a live source (asset) added to a show (turning it into a "clip")</li> <li>• a placeholder (asset) added to a show (turning it into a "clip")</li> </ul> </li> </ul>

Element	Characteristics
Secondary event ("Secondaries")	<ul style="list-style-type: none"> <li>• additional component of a playlist, show, or clip</li> <li>• examples: <ul style="list-style-type: none"> <li>• graphics (for example, corner bug, crawl)</li> <li>• subtitles/closed captions</li> <li>• recording (for example, for scheduled recording of a live source)</li> <li>• audio mapping (for customized audio track assignment)</li> <li>• splicing (marker for content replacement)</li> <li>• routing (generic routing that sends switching pulses to downstream video routers)</li> </ul> </li> </ul>
Clip	<ul style="list-style-type: none"> <li>• an asset (video file or virtual placeholder) is considered a clip if it is assigned to a show</li> <li>• a clip is considered a primary event</li> <li>• can have secondary events (optional)</li> <li>• the duration can vary from the actual file duration if a subclip is defined, by setting mark in and mark out markers</li> <li>• initially has no specific time reference, but acquires it when it is added to a show and the show is added to a playlist</li> </ul>

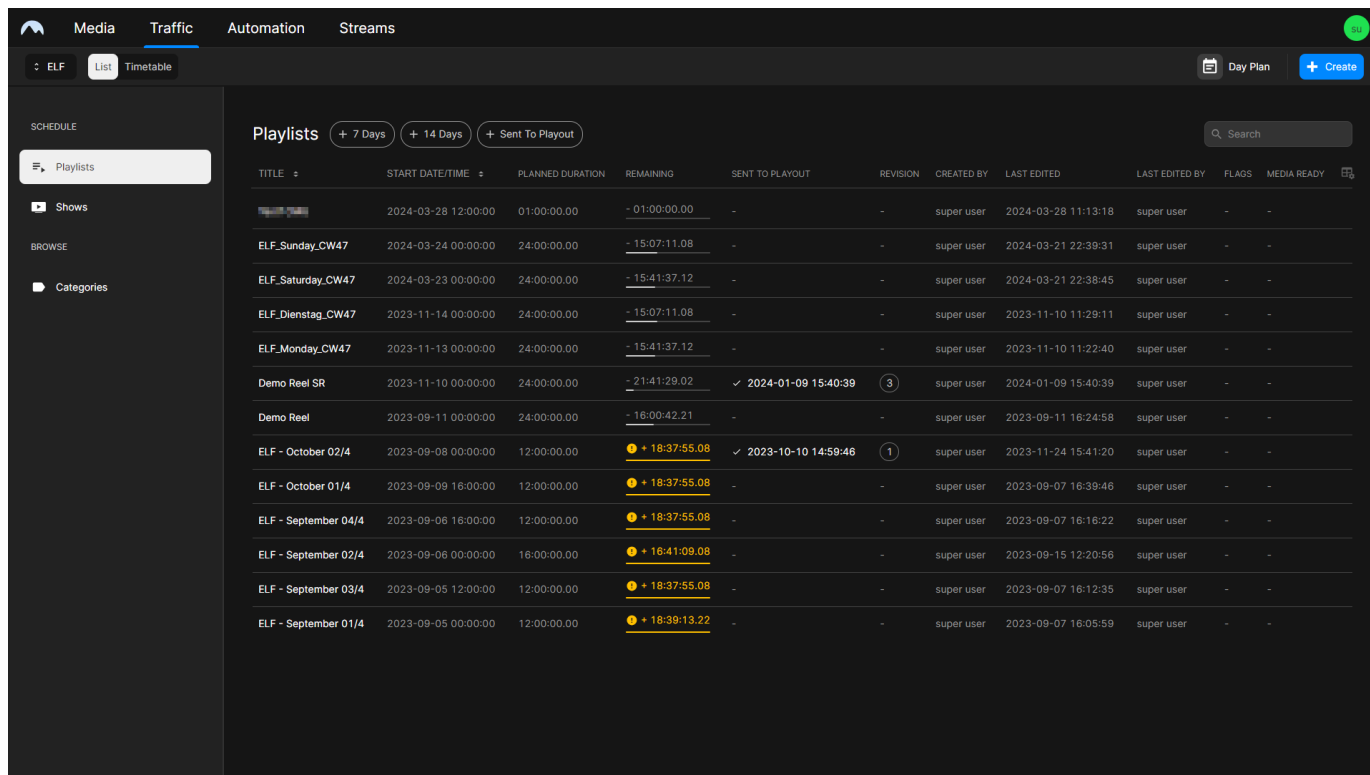
Element	Characteristics
Show	<ul style="list-style-type: none"> <li>• container for one or more media elements (primary events and optional secondary events)</li> </ul> <p>example: a show created for a television news program, which usually consists of primary events like, for example:</p> <ul style="list-style-type: none"> <li>• opener</li> <li>• multiple stories (each consisting of an introduction and a report)</li> <li>• closer</li> </ul> <ul style="list-style-type: none"> <li>• is channel-specific</li> <li>• show content can be categorized</li> <li>• has a duration that corresponds to the combined duration of all included primary events</li> <li>• flags define the show behavior, for example, play clips randomly, play show without any assigned secondary events (useful if the show includes ads, which should usually be played without any additional graphics), etc.</li> <li>• flags define the clip behavior and can be set for each clip</li> <li>• can have secondary events (optional)</li> <li>• to be played, a show must be added to a playlist (cannot be played directly)</li> <li>• initially has no specific time reference, but acquires it when it is added to a playlist</li> </ul>
Playlist	<ul style="list-style-type: none"> <li>• consists of one or more shows</li> <li>• is channel-specific</li> <li>• has a time reference, as it has a specific start date and time</li> <li>• consists only of shows and optional secondary events</li> <li>• has a duration that corresponds to the total duration of all included shows</li> </ul>
Rundown	<ul style="list-style-type: none"> <li>• channel-specific list of media elements ("events") to be played</li> <li>• consists at the top level of playlists, which consist of shows, which in turn consist of clips</li> </ul>

## Accessing Makalu Traffic

To access **Makalu Traffic**, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the **Applications** area on the left side, in section **Scheduling** select **Makalu Traffic 2.0**.

The Makalu Traffic UI is opened in the **Traffic** tab of the **Makalu UI**.



The screenshot displays the Makalu Traffic UI interface. At the top, there are navigation tabs for Media, Traffic (selected), Automation, and Streams. Below the navigation, there are options for 'ELF', 'List', and 'Timetable', along with a 'Day Plan' icon and a '+ Create' button. The main content area is titled 'Playlists' and includes filters for '+ 7 Days', '+ 14 Days', and '+ Sent To Playout'. A search bar is also present. The table below lists various playlists with columns for Title, Start Date/Time, Planned Duration, Remaining, Sent to Playout, Revision, Created By, Last Edited, Last Edited By, Flags, and Media Ready.

TITLE	START DATE/TIME	PLANNED DURATION	REMAINING	SENT TO PLAYOUT	REVISION	CREATED BY	LAST EDITED	LAST EDITED BY	FLAGS	MEDIA READY
	2024-03-28 12:00:00	01:00:00.00	- 01:00:00.00	-	-	super user	2024-03-28 11:13:18	super user	-	-
ELF_Sunday_CW47	2024-03-24 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2024-03-21 22:39:31	super user	-	-
ELF_Saturday_CW47	2024-03-23 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2024-03-21 22:38:45	super user	-	-
ELF_Dienstag_CW47	2023-11-14 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2023-11-10 11:29:11	super user	-	-
ELF_Monday_CW47	2023-11-13 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2023-11-10 11:22:40	super user	-	-
Demo Reel SR	2023-11-10 00:00:00	24:00:00.00	- 21:41:29.02	✓ 2024-01-09 15:40:39	3	super user	2024-01-09 15:40:39	super user	-	-
Demo Reel	2023-09-11 00:00:00	24:00:00.00	- 16:00:42.21	-	-	super user	2023-09-11 16:24:58	super user	-	-
ELF - October 02/4	2023-09-08 00:00:00	12:00:00.00	● + 18:37:55.08	✓ 2023-10-10 14:59:46	1	super user	2023-11-24 15:41:20	super user	-	-
ELF - October 01/4	2023-09-09 16:00:00	12:00:00.00	● + 18:37:55.08	-	-	super user	2023-09-07 16:39:46	super user	-	-
ELF - September 04/4	2023-09-06 16:00:00	12:00:00.00	● + 18:37:55.08	-	-	super user	2023-09-07 16:16:22	super user	-	-
ELF - September 02/4	2023-09-06 00:00:00	16:00:00.00	● + 16:41:09.08	-	-	super user	2023-09-15 12:20:56	super user	-	-
ELF - September 03/4	2023-09-05 12:00:00	12:00:00.00	● + 18:37:55.08	-	-	super user	2023-09-07 16:12:35	super user	-	-
ELF - September 01/4	2023-09-05 00:00:00	12:00:00.00	● + 18:39:13.22	-	-	super user	2023-09-07 16:05:59	super user	-	-

Traffic - UI

## 2.3.2 Using playlists

### Using the Playlists view

The **Playlists** view is displayed by default when you open the Makalu Traffic UI. To display it again at a later time, select **Playlists** in the sidebar on the left.

It provides an overview of all available playlists for the currently selected channel and can be displayed as either [List](#) or [Timetable view](#). To switch between the views, use the **View selector** at the top left. To switch between channels, use the **Channel selector** to the left of it, which includes a list of all available channels.

TITLE	START DATE/TIME	PLANNED DURATION	REMAINING	SENT TO PLAYLIST	REVISION	CREATED BY	LAST EDITED	LAST EDITED BY	FLAGS	MEDIA READY
	2024-03-28 12:00:00	01:00:00.00	- 01:00:00.00	-	-	super user	2024-03-28 11:13:18	super user	-	-
ELF_Sunday_CW47	2024-03-24 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2024-03-21 22:38:31	super user	-	-
ELF_Saturday_CW47	2024-03-23 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2024-03-21 22:38:45	super user	-	-
ELF_Dienstag_CW47	2023-11-14 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2023-11-10 11:29:11	super user	-	-
ELF_Monday_CW47	2023-11-13 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2023-11-10 11:22:40	super user	-	-
Demo Reel SR	2023-11-10 00:00:00	24:00:00.00	- 21:41:29.02	✓ 2024-01-09 15:40:39	3	super user	2024-01-09 15:40:39	super user	-	-
Demo Reel	2023-09-11 00:00:00	24:00:00.00	- 16:00:42.21	-	-	super user	2023-09-11 16:24:58	super user	-	-
ELF - October 02/4	2023-09-08 00:00:00	12:00:00.00	• + 18:37:55.08	✓ 2023-10-10 14:59:46	1	super user	2023-11-24 15:41:20	super user	-	-
ELF - October 01/4	2023-09-09 16:00:00	12:00:00.00	• + 18:37:55.08	-	-	super user	2023-09-07 16:39:46	super user	-	-
ELF - September 04/4	2023-09-06 16:00:00	12:00:00.00	• + 18:37:55.08	-	-	super user	2023-09-07 16:16:22	super user	-	-
ELF - September 02/4	2023-09-06 00:00:00	16:00:00.00	• + 16:41:09.08	-	-	super user	2023-09-15 12:20:56	super user	-	-
ELF - September 03/4	2023-09-05 12:00:00	12:00:00.00	• + 18:37:55.08	-	-	super user	2023-09-07 16:12:35	super user	-	-
ELF - September 01/4	2023-09-05 00:00:00	12:00:00.00	• + 18:39:13.22	-	-	super user	2023-09-07 16:05:59	super user	-	-

*Traffic - Playlists - Channel and view selection*

#### **i** Notice

In the context of program planning via Makalu Traffic, no distinction is made between redundant and non-redundant channels. All available channels are listed once and can be selected using the **Channel selector**. The scheduled program applies to the entire selected channel and all its players (main and backup, if applicable).


#### USING THE LIST VIEW

When you open the **Playlists** area, the **List** view is selected by default. It displays all available playlists in table form, sorted by their start time.



TITLE	START DATE/TIME	PLANNED DURATION	REMAINING	SENT TO PLAYLIST	REVISION	CREATED BY	LAST EDITED	LAST EDITED BY	FLAGS	MEDIA READY
	2024-03-28 12:00:00	01:00:00.00	- 01:00:00.00	-	-	super user	2024-03-28 11:13:18	super user	-	-
ELF_Sunday_CW47	2024-03-24 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2024-03-21 22:39:31	super user	-	-
ELF_Saturday_CW47	2024-03-23 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2024-03-21 22:38:45	super user	-	-
ELF_Dienstag_CW47	2023-11-14 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2023-11-10 11:29:11	super user	-	-
ELF_Monday_CW47	2023-11-13 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2023-11-10 11:22:40	super user	-	-
Demo Reel SR	2023-11-10 00:00:00	24:00:00.00	- 21:41:29.02	✓ 2024-01-09 15:40:39	3	super user	2024-01-09 15:40:39	super user	-	-
Demo Reel	2023-09-11 00:00:00	24:00:00.00	- 16:00:42.21	-	-	super user	2023-09-11 16:24:58	super user	-	-
ELF - October 02/4	2023-09-08 00:00:00	12:00:00.00	+ 18:37:55.08	✓ 2023-10-10 14:59:46	1	super user	2023-11-24 15:41:20	super user	-	-
ELF - October 01/4	2023-09-09 16:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:39:46	super user	-	-
ELF - September 04/4	2023-09-06 16:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:16:22	super user	-	-
ELF - September 02/4	2023-09-06 00:00:00	16:00:00.00	+ 16:41:09.08	-	-	super user	2023-09-15 12:20:56	super user	-	-
ELF - September 03/4	2023-09-05 12:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:12:35	super user	-	-
ELF - September 01/4	2023-09-05 00:00:00	12:00:00.00	+ 18:39:13.22	-	-	super user	2023-09-07 16:05:59	super user	-	-

Traffic - Playlists - List view

By default, only a selection of available columns is displayed. To customize the displayed columns, click the **Column selection** icon  at the top right and select the columns to be displayed. The columns **Title** and **Start date/time** are sortable. You can change the sort order, by clicking the name of the corresponding column. Most of the available columns are self-explanatory, but some columns provide additional information.


The column **Remaining** displays the fill level (the total duration of all the shows the playlist contains, in relation to the **Planned Duration** of the playlist). If a playlist is not yet completely filled, it is highlighted in gray. In this case, the time to be filled is displayed as a negative value (for example, `-00:10:00:00` if there are 10 minutes still to be filled). If a playlist is "overfilled" (if the total duration of the shows it contains exceeds the planned duration of the playlist), it is highlighted in orange and with a warning icon. The remaining time is then displayed as a positive value (for example, `+00:10:00:00` if the total duration of the added shows exceeds the planned playlist duration by 10 minutes).

#### Tip

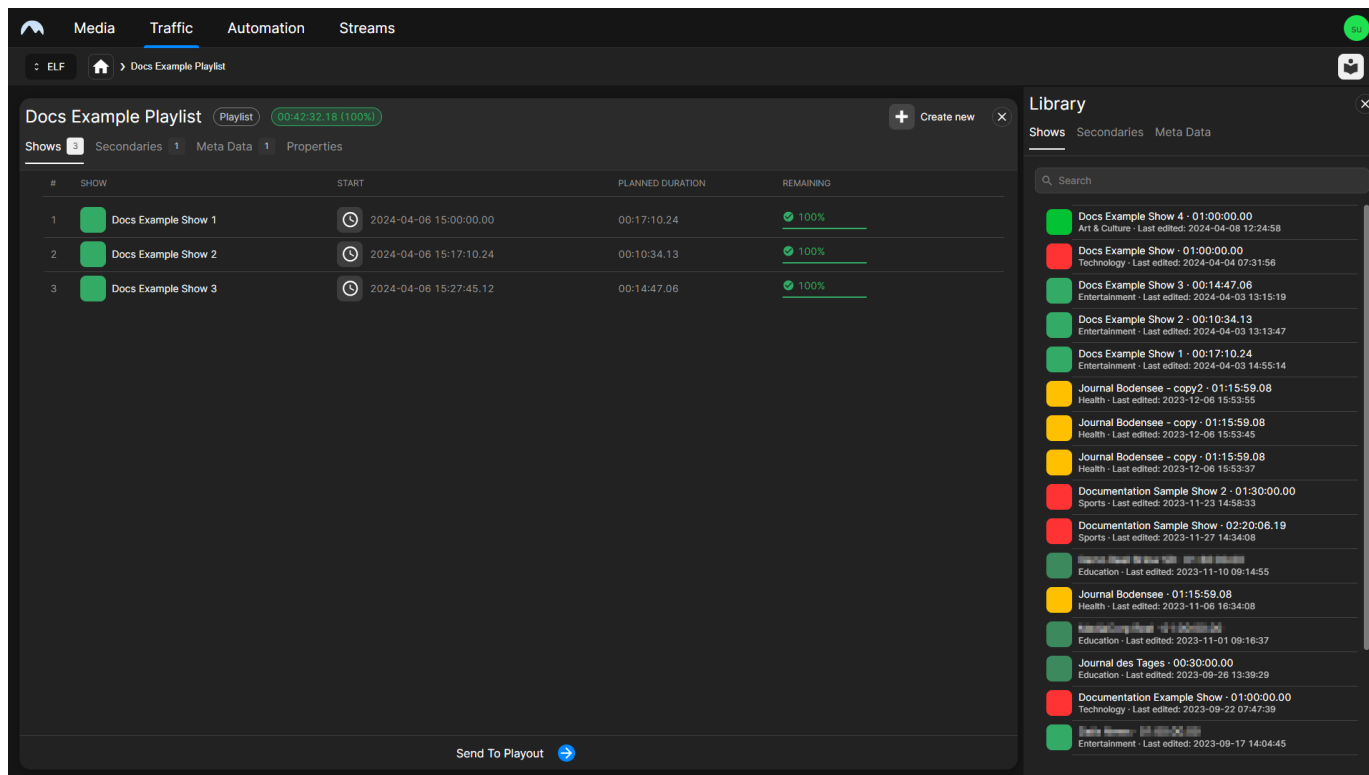
You can also display the fill level as a percentage, by hovering your mouse over the value displayed in the column **Remaining**.

The optional column **Revision** displays the revision number of the playlist. It is increased every time a playlist is [sent to playlist](#).


The list of playlists can be narrowed, by using the filter functions above the table. They enable you to filter the list based on the planned playlist start date (for example, in the next 7 or 14 days) or based on the status if the playlist was already sent to playlist. You can also search for a specific playlist title, by using the search field at the top right.


You can create a new playlist, by clicking **Create** at the top right. Additional functions (**Delete**, **Duplicate**, and **Send to playlist**) are available per playlist via the **Options** icon  on the right side of each playlist row. A detailed view of each playlist can be opened, by clicking **Open**.

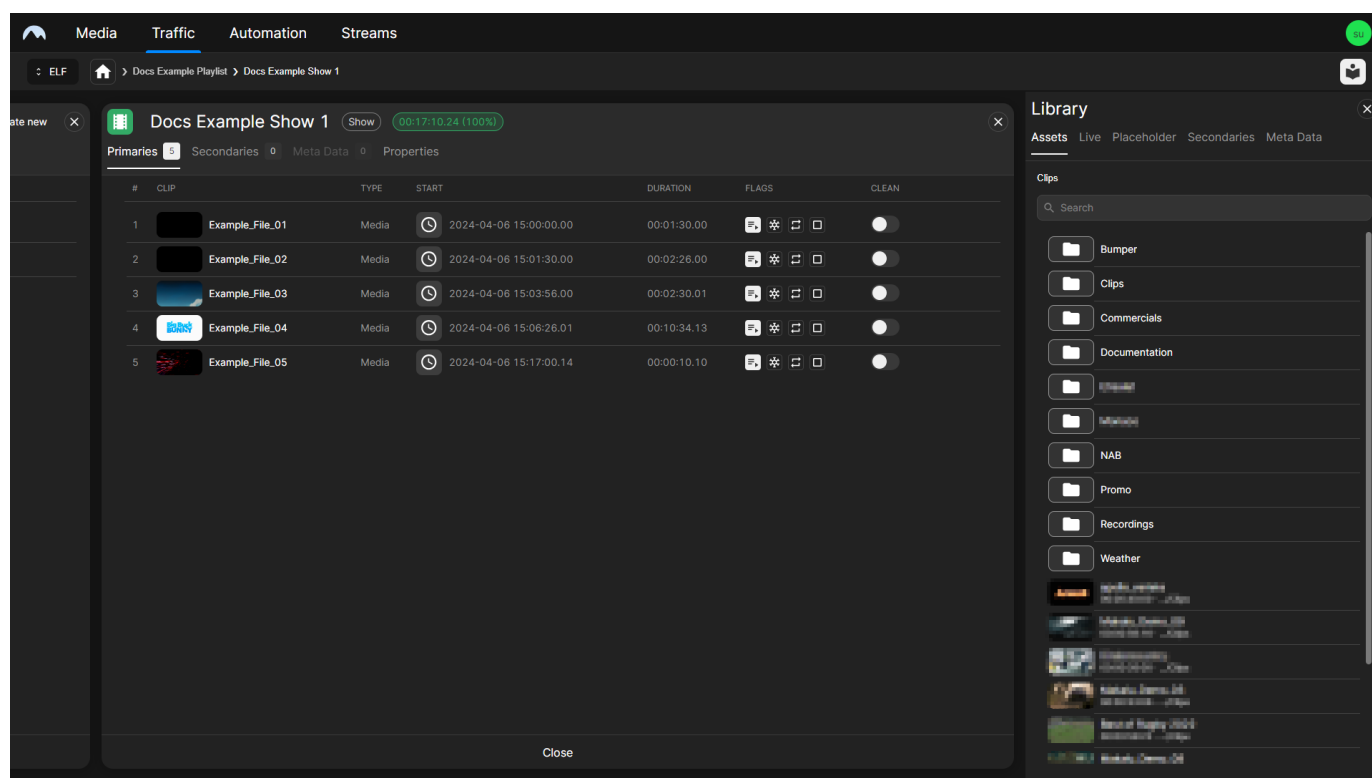
The detailed playlist view displays the fill level of the playlist at the top. The components of the playlist (shows, secondary events, metadata, and properties) are listed below and can be accessed via corresponding tabs. On the right side, the library is displayed.



### Traffic - Playlist details

The library can be displayed or hidden, by clicking the **Library** icon  at the top right. It lists all available shows, secondary events, and metadata that can be added to the playlist and/or the shows of the playlist. You can search for specific elements, by using the search menu above the list. Elements listed in the library can be added to the currently opened playlist or the included shows via drag and drop. Alternatively, you can add an element to the current playlist, by clicking the **Plus** icon to the right of the element to be added.

You can create a new show, by clicking **Create new** above the list of shows. Selecting a show displays the included clips on the right side. Additional functions (**Duplicate** and **Remove**) are available per show via the **Options** icon  on the right side of each show row. You can open a detailed view of each show, by clicking **Open**. It provides an overview of all components of the show and access to the details of each included clip. For more information about how to use the **Shows view**, see section [Using the Shows view](#).



*Traffic - Show details*

This type of display enables efficient horizontal navigation from a playlist to a show to a single clip. All three hierarchy levels are displayed side by side. Depending on the display resolution used, a scroll bar may be displayed at the bottom of the page. By moving the scroll bar to the left or right, navigation across the three levels is possible at any time.

In addition, there is also a "breadcrumb" navigation at the top left that enables you to navigate between the three hierarchy levels. You can also use it to return to the main page, by clicking the **Home** icon 🏠.

#### USING THE TIMETABLE VIEW

To open the **Timetable** view, use the View selector at the top left and select **Timetable**. The **Timetable** view displays playlists in a calendar view, based on their scheduled start date and time. It is especially useful during the start of the planning process and the initial playlist creation, as it makes it easy to see which days have already been completely filled with playlists and where there may still be free times or gaps. In addition, it enables you to conveniently add playlists to the timetable and add shows to playlists via drag and drop. When opening the **Timetable** view, first the current week is displayed and the current day is highlighted.

*Traffic - Playlists - Timetable view*

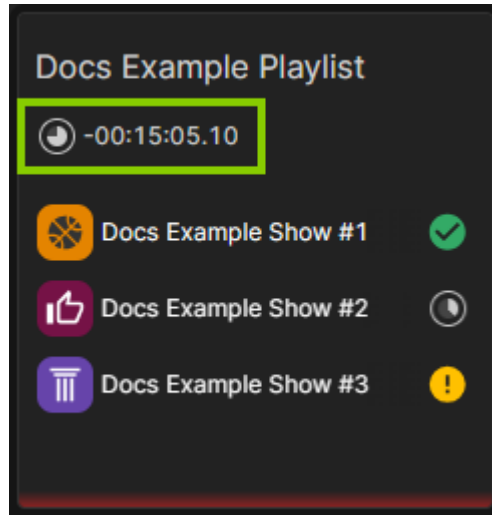
Scheduled playlists are displayed with a list of included shows and information about their total fill level, the individual fill level of each show they contain, and whether the playlist has already been sent to playlist.

The following icons are used to make it easier to visually distinguish the fill level of the individual elements:

Icon	Description
	Playlist/Show is empty
	Playlist/Show is partially filled
	Playlist/Show is filled completely
	Playlist/Show is overfilled

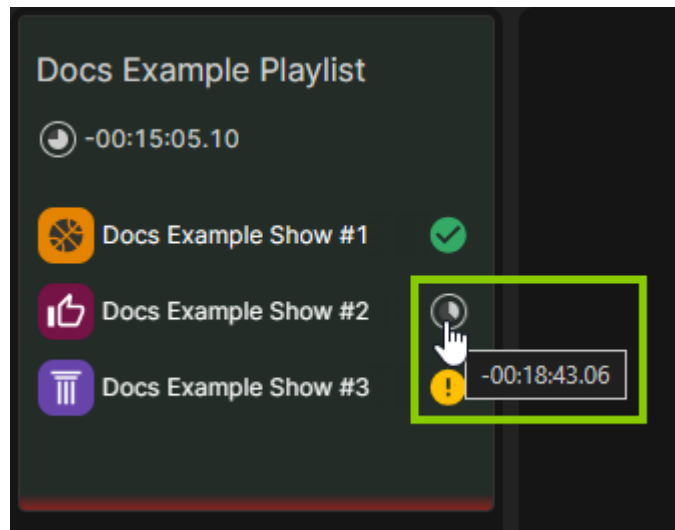
### Tip

If a playlist is either partially filled or overfilled, the under- or overrun time is displayed next to its fill level icon.



*Timetable view - Playlist fill level*

You can also display this time for a show, by hovering your mouse over the fill level icon of the show.



*Timetable view - Show fill level*

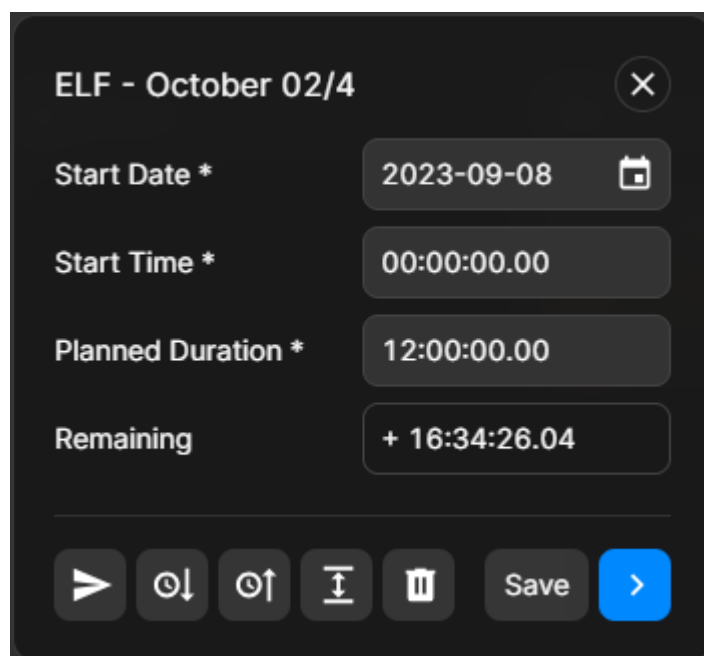
If multiple playlists are scheduled for the same time or if their planned times partially overlap, the day view is split and the conflicting playlists are displayed side by side.



*Traffic - Timetable view - Conflicting scheduled playlists*








The controls at the top right of the **Timetable** view enable you to zoom in and out of the time display, as well as to select the calendar week to be displayed. To the right of these controls, your local time zone is displayed. You can also display or hide the menu for listing and searching available playlists and shows, by clicking **All Playlists and Shows**.

Selecting a playlist in the **Timetable** view opens an actions menu, that displays basic time properties and provides additional editing functions.



*Traffic - Timetable view - Playlist actions*

In addition to changing the time properties **Start Date**, **Start Time**, and **Planned Duration** of the selected playlist, the actions menu provides the following functions:

Icon	Function	Description
	Send to playlist	Send playlist to playout (see section <a href="#">Sending a playlist to playout</a> )
	Snap forward	Snap playlist to the beginning of the next playlist (close the gap to the following playlist)
	Snap backward	Snap playlist to the end of the previous playlist (close the gap to the previous playlist)
	Expand	Change planned start time and/or extend planned duration of the playlist to fill a gap before and/or after the playlist
	Delete	Delete playlist
	Save	Save edited time properties
	Open	Open detailed playlist view

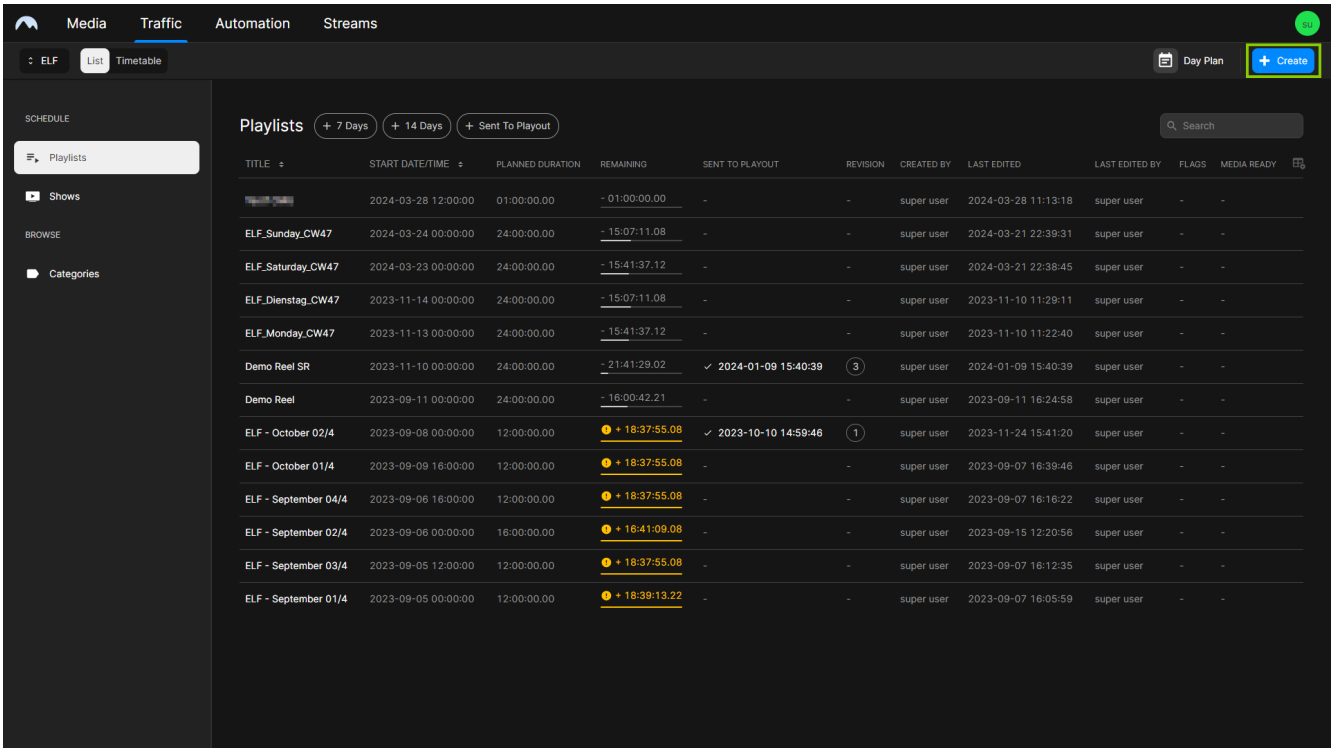
You can create a new playlist, by clicking **Create new** at the top center. Alternatively, you can also create a new playlist, by clicking the **Plus** icon, which is displayed when you hover your mouse over a free time slot on a day. Afterward, a menu is displayed that allows you to specify basic playlist properties.

Opening a playlist in the timeline view displays the same detailed view as mentioned in section [Using the List view](#).

### Creating a playlist

To create a new playlist, proceed as follows:

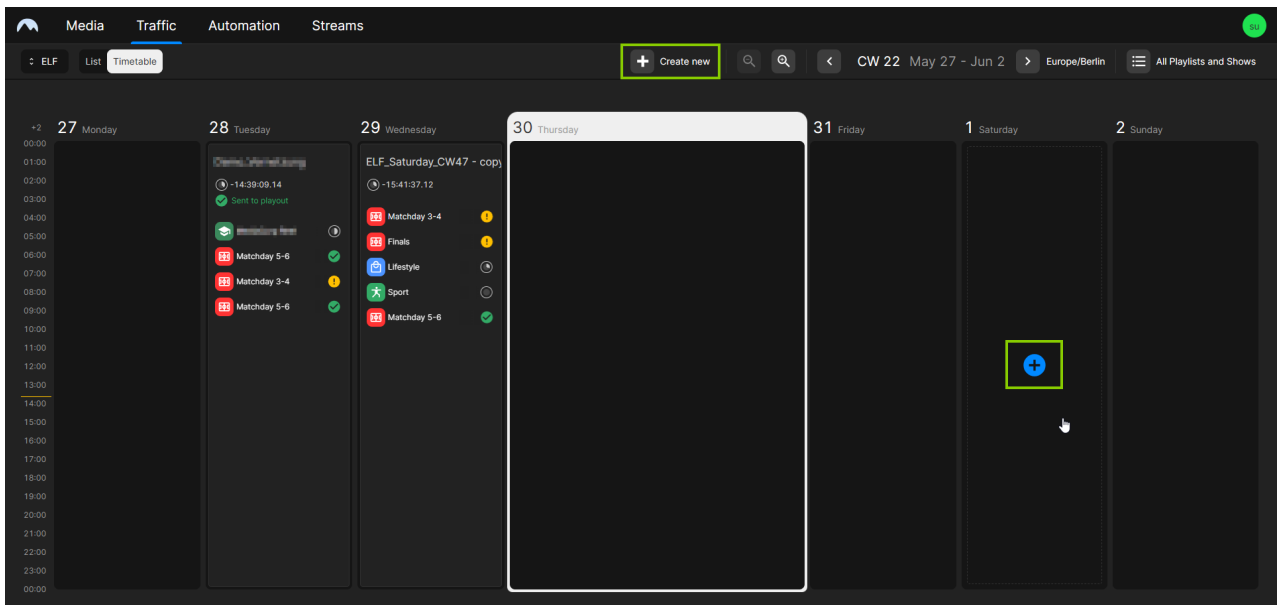
1. In the sidebar on the left, select **Playlists**.  
*The **List** view is opened and all available playlists for the currently selected channel are listed in the middle.*
2. At the top right click **Create**.



Traffic - Create playlist

**Tip**

If you are using the **Timetable** view instead of the **List** view, either click **Create new** at the top center or the **Plus** icon, which appears when you hover your mouse over a free time slot on a day.



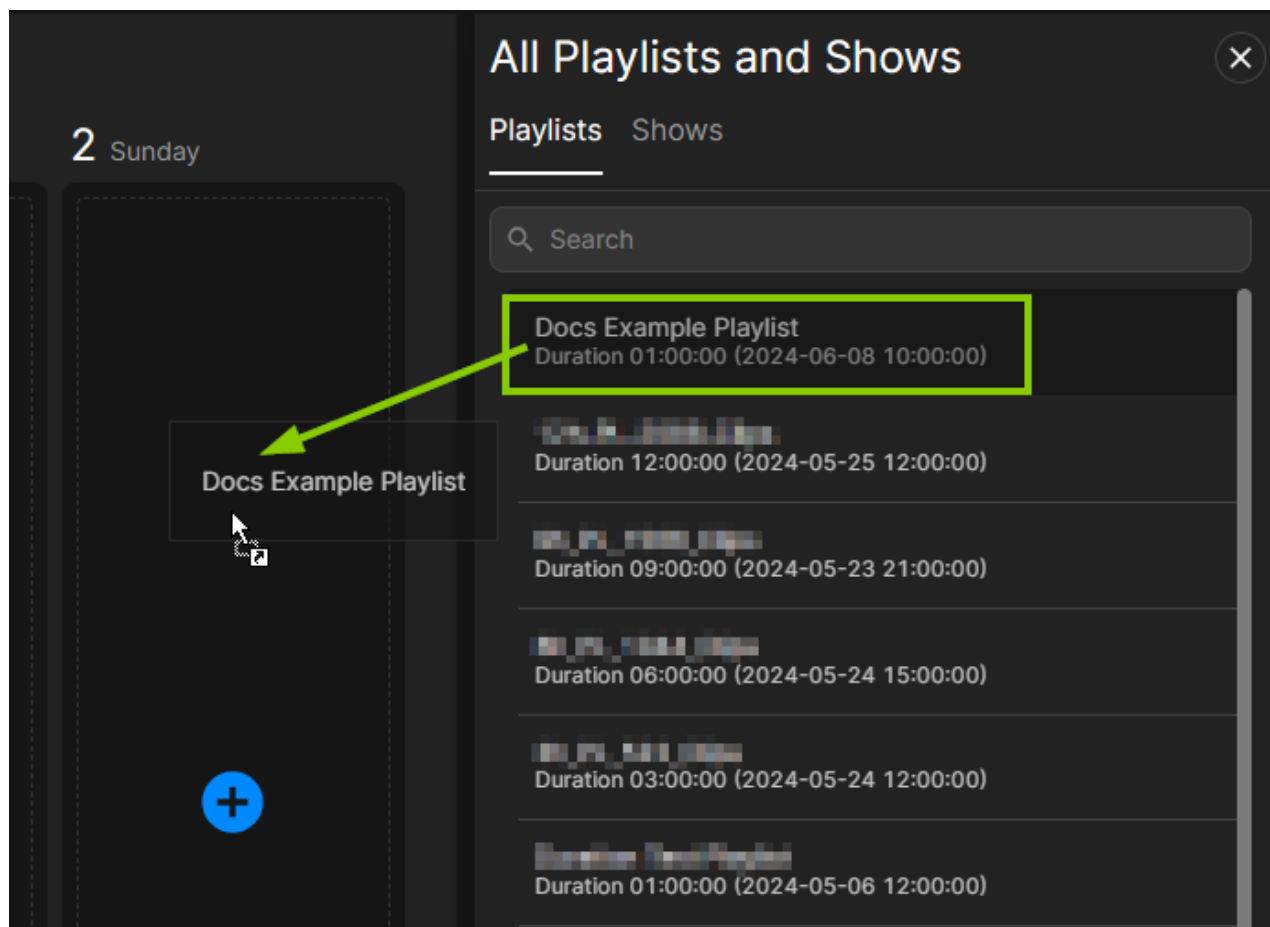
Traffic - Create playlist in Timetable view



 **Tip**

If you are using the **Timetable** view instead of the **List** view, you can also add an existing playlist directly to the timetable from the library, by using drag and drop. To do this, proceed as follows:

- Open the list of available shows, by clicking **All Playlists and Shows** at the top right.
- At the top of the list select **Playlists**.
- Use the search menu above the list to search for a specific playlist.
- Drag a playlist from the list and drop it on a free time slot in the timetable.



*Traffic - Add playlist to timetable*

*The selected playlist is added to the timetable.*

The **Create** menu is displayed.

- In the **Playlist** tab, set the basic playlist properties and fill in all required fields.

*Traffic - Set basic playlist properties*

4. To create the playlist with the selected properties, click **Create playlist**.

*The playlist is created, and the list of available playlists is displayed again.*

 **Tip**


If you are using the **Timetable** view instead of the **List** view, the **Timetable** view is displayed again.

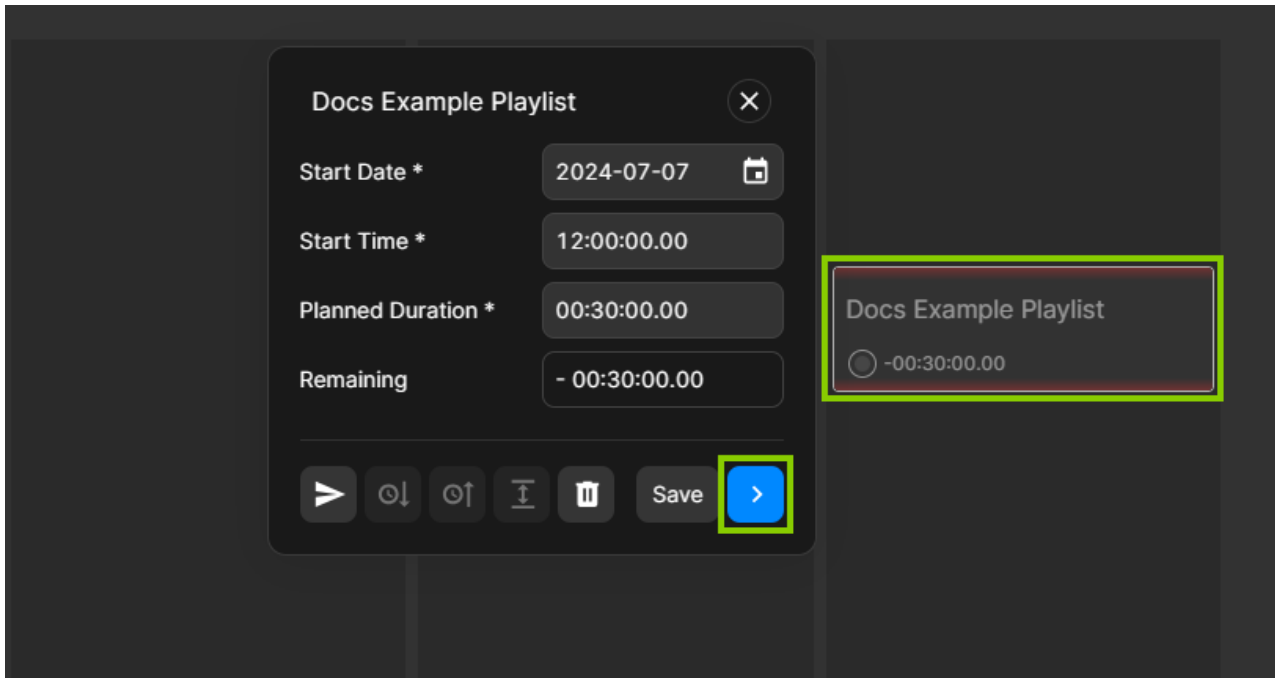
Since the newly created playlist is initially empty, the next step is to add a show to the playlist.

To add a show to a playlist, proceed as follows:

1. Open the playlist, by selecting it in the list of available playlists and click **Open** at the right end of the corresponding row.

 **Tip**

If you are using the **Timetable** view instead of the **List** view, select the playlist and click the **Open** icon  in the actions menu.

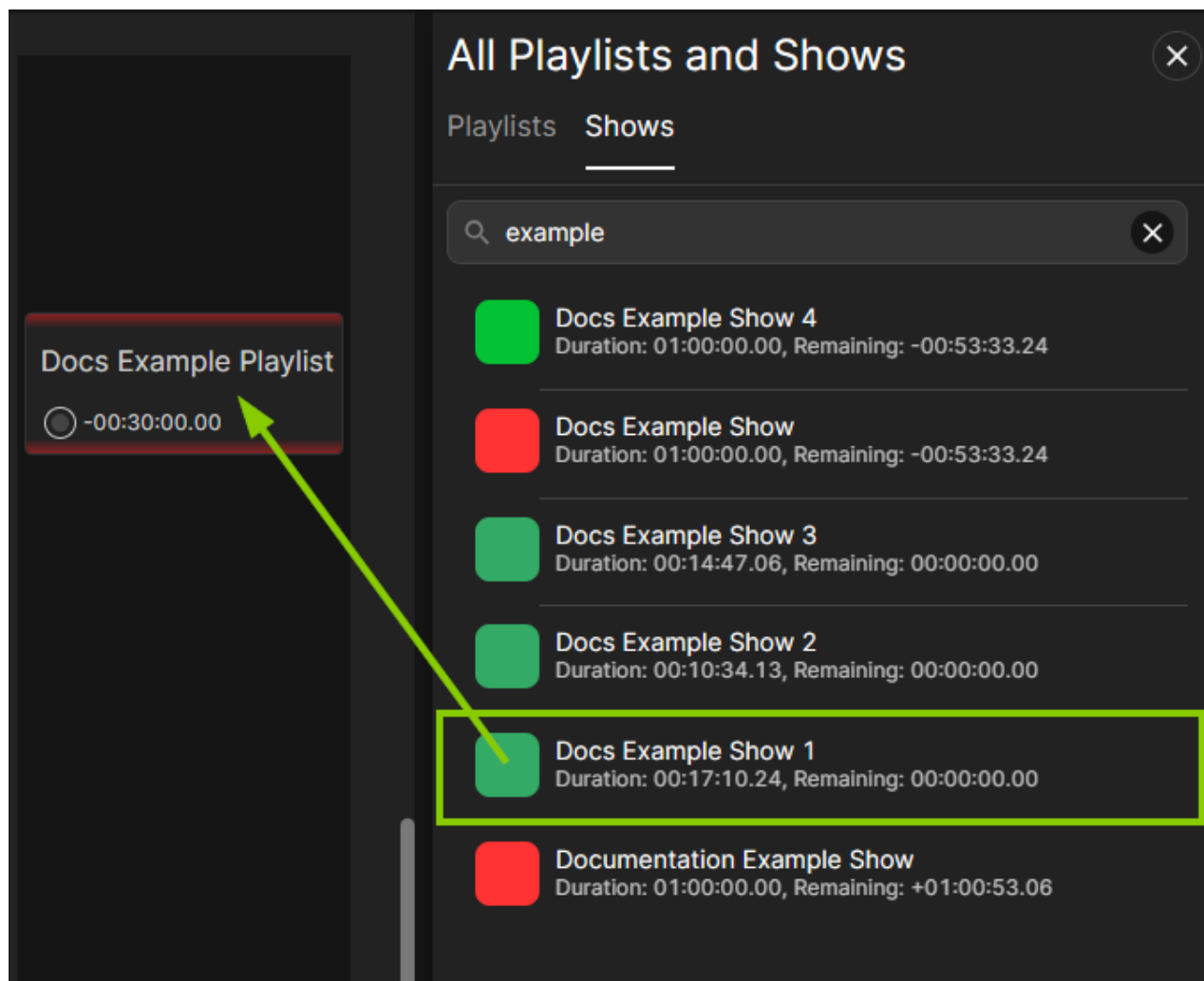


Traffic - Open playlist in Timetable view

### Tip

If you are using the **Timetable** view instead of the **List** view, you can also add shows directly to the playlist using drag and drop without opening the playlist first. To do this, proceed as follows:

- a. Open the list of available shows, by clicking **All Playlists and Shows** at the top right.
- b. At the top of the list select **Shows**.
- c. Use the search menu above the list to search for a specific show.
- d. Drag a show from the list and drop it on the corresponding playlist in the timetable.

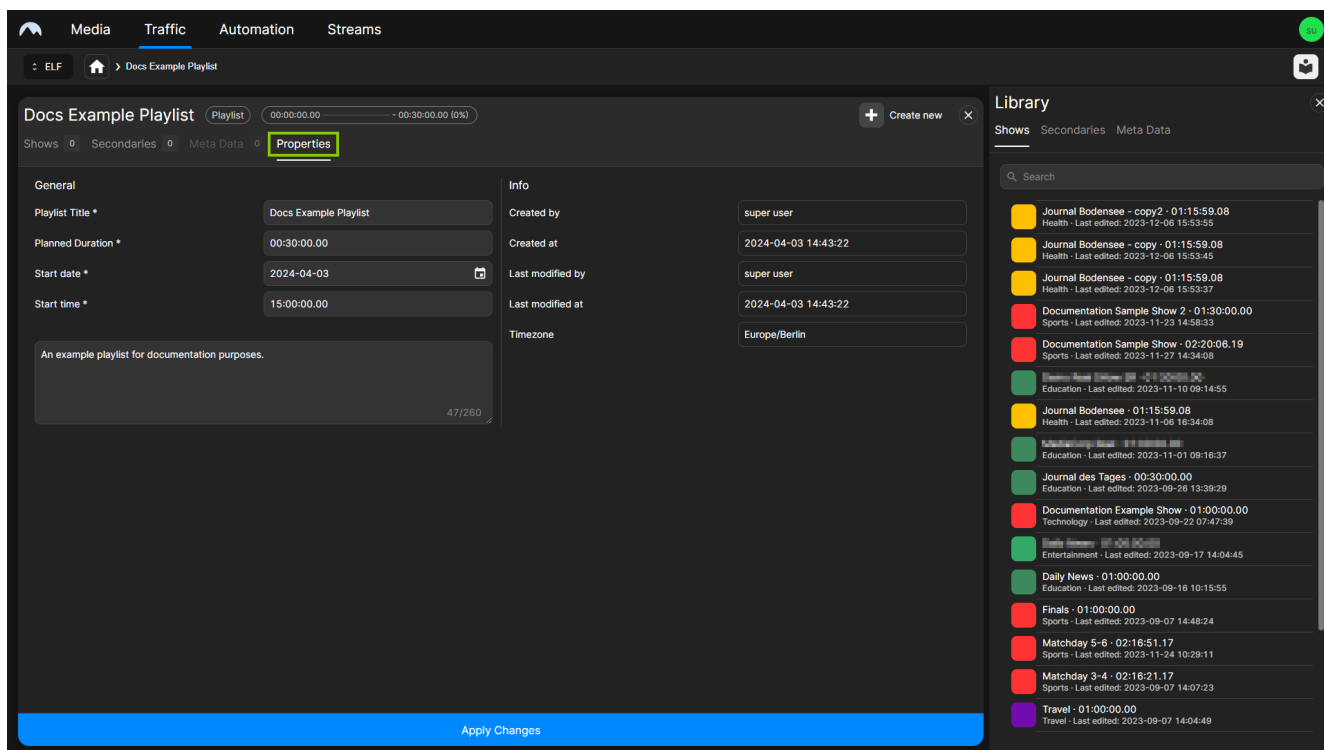


*Traffic - Add show to playlist in Timetable view*

*The selected show is added to the playlist. The displayed fill level of the playlist is updated accordingly.*

*The playlist is opened.*

2. (Optional) Edit the basic [playlist properties](#) in the **Properties** tab and confirm your changes, by clicking **Apply Changes** at the bottom of the screen.



*Traffic - Edit basic playlist properties*

3. Add one or more shows to the playlist, either by creating a new show or by adding an existing show from the library.
  - a. (Optional) To create a new show, click **Create new** at the top right. In the **Create** menu enter the basic show details and click **Create show**.

**Create**

**Show**

Show title \* Docs Example Show 1

Planned duration \* 00:10:00.00

Category \* Entertainment

An example show for documentation purposes.

43/260

\* Required fields

**Create show**

Traffic - Create new show

The show is created and added to the playlist.

Media Traffic Automation Streams

ELF Docs Example Playlist Zum Beenden des Vollbildmodus F11 drücken

**Docs Example Playlist** (Playlist) 00:00:00.00 - 00:30:00.00 (0%)

Shows Secondarys Meta Data Properties

#	SHOW	START	PLANNED DURATION	REMAINING
1	Docs Example Show 1	2024-04-03 15:00:00.00	00:10:00.00	- 00:10:00.00

Send To Playlist

**Library**

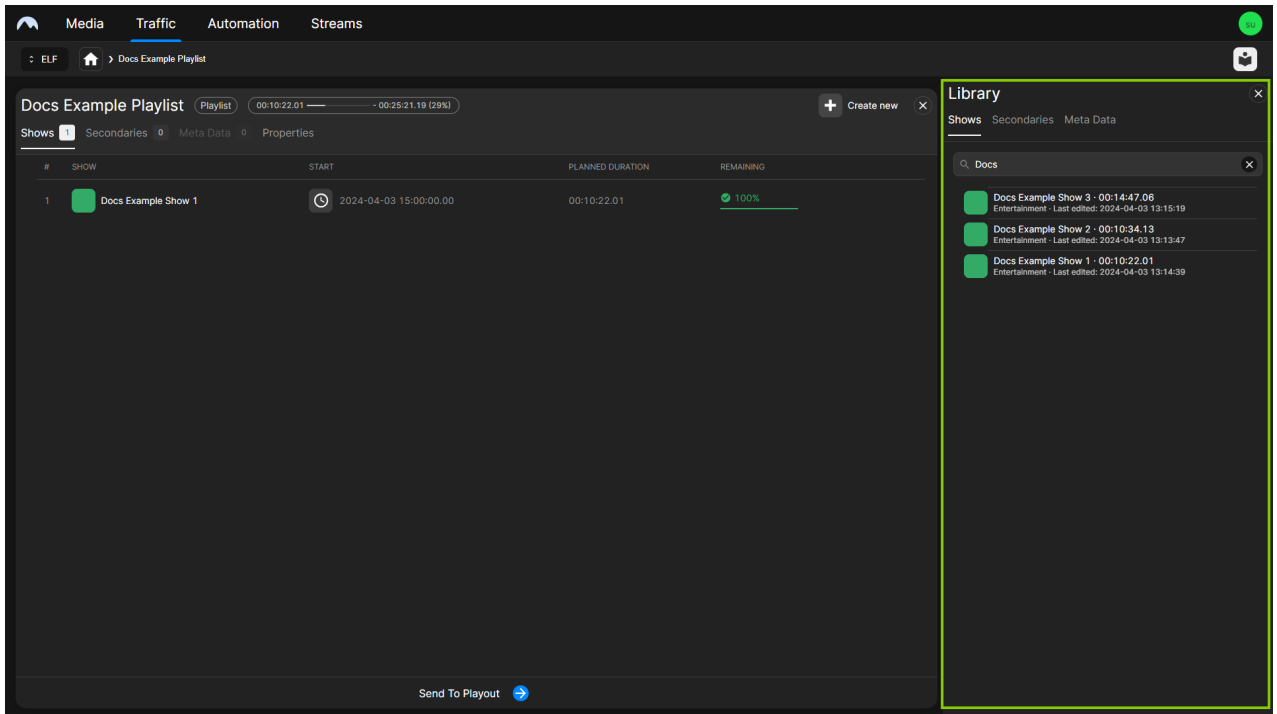
Shows Secondarys Meta Data

Search

- Docs Example Show 1 - 00:10:00.00  
Entertainment - Last edited: 2024-04-03 13:05:31
- Journal Bodensee - copy2 - 01:15:59.08  
Health - Last edited: 2023-12-08 15:53:55
- Journal Bodensee - copy - 01:15:59.08  
Health - Last edited: 2023-12-08 15:53:45
- Journal Bodensee - copy - 01:15:59.08  
Health - Last edited: 2023-12-08 15:53:37
- Documentation Sample Show 2 - 01:30:00.00  
Sports - Last edited: 2023-11-23 14:58:33
- Documentation Sample Show - 02:20:06.19  
Sports - Last edited: 2023-11-27 14:34:08
- Journal Bodensee - 01:15:59.08  
Health - Last edited: 2023-11-08 16:34:08
- Journal des Tages - 00:30:00.00  
Education - Last edited: 2023-11-01 09:16:37
- Documentation Example Show - 01:00:00.00  
Technology - Last edited: 2023-09-22 07:47:39
- Daily News - 01:00:00.00  
Education - Last edited: 2023-09-18 10:15:55
- Finals - 01:00:00.00  
Sports - Last edited: 2023-09-07 14:48:24
- Matchday 5-6 - 02:18:51.17  
Sports - Last edited: 2023-11-24 10:29:11
- Matchday 3-4 - 02:18:21.17  
Sports - Last edited: 2023-09-07 14:07:23

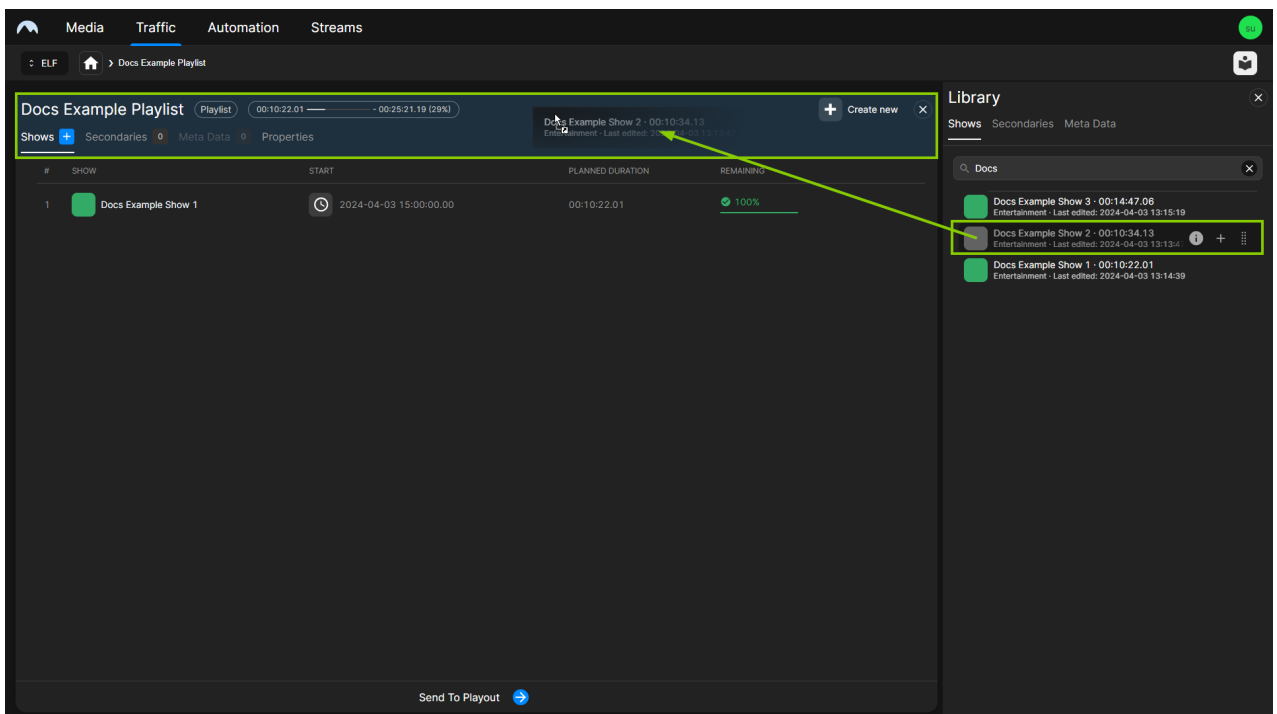
Traffic - New show created

- b. To add an existing show, use the **Library** which is displayed on the right side. The **Shows** tab is selected by default, and all available shows are listed below. To filter the available shows, use the search field above the list.



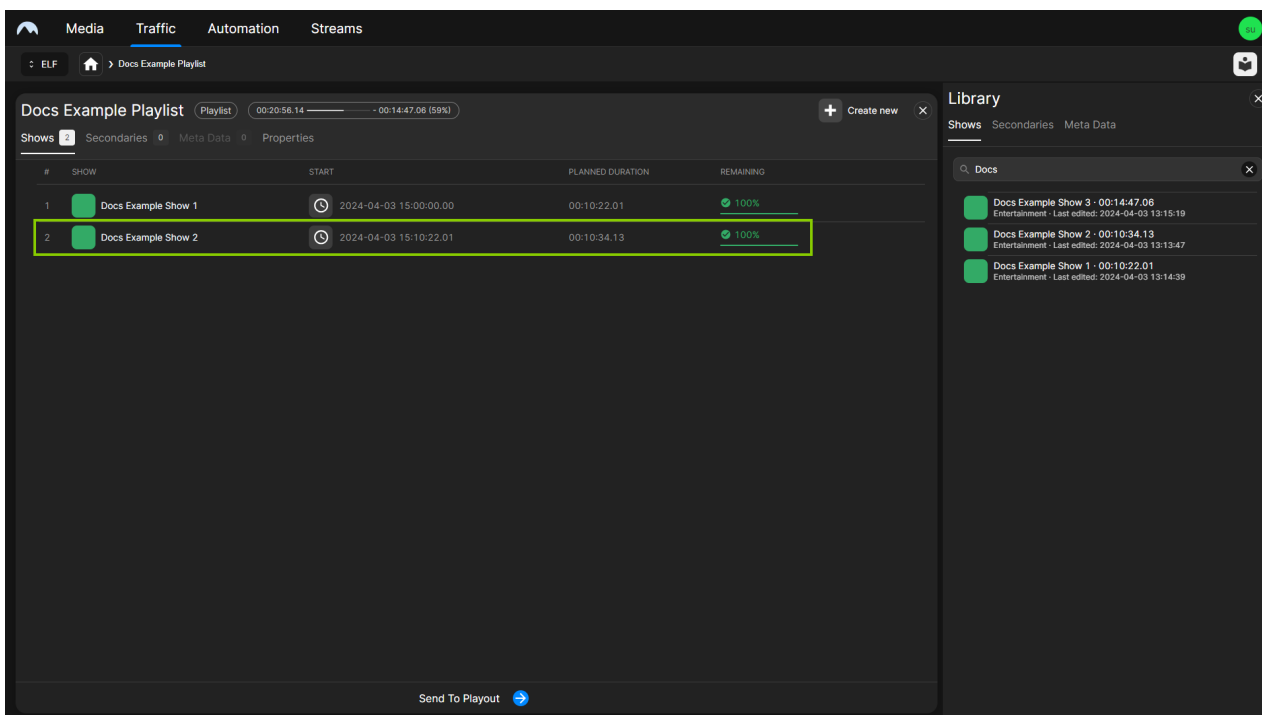
*Traffic - Filtered shows*

- c. Add a show to the playlist, for example, as last element, by dropping it in the information area at the top of the playlist. You can also insert it at a specific position within the playlist, by dragging and dropping it on the desired position within the show order. Alternatively, you can select the show in the library and click the **Plus** icon at the right end of the corresponding row.



*Traffic - Add shows to a playlist*

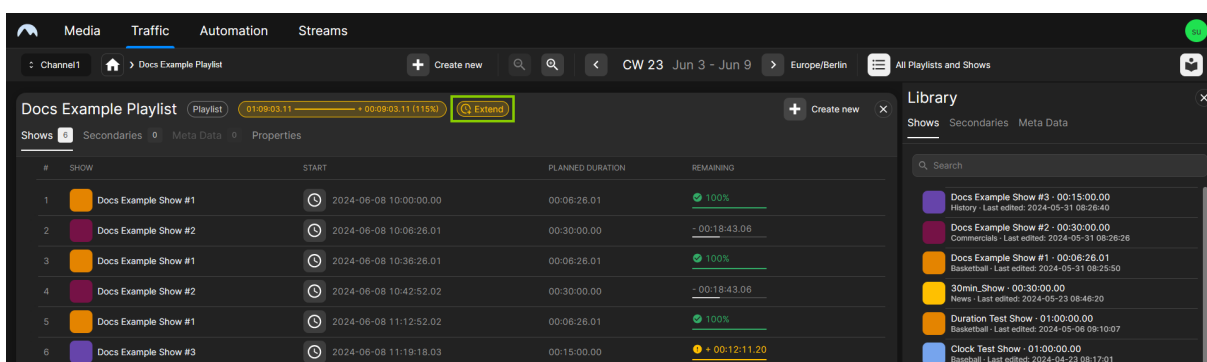
The show is added to the playlist. The fill level display at the top is updated accordingly.



Traffic - Shows added to a playlist

### Tip

If the total duration of the added shows exceeds the planned duration of the playlist, the playlist counts as "overfilled" and the fill level is highlighted accordingly. If you want to extend the planned duration of the playlist to the total duration of the added shows, click **Extend** to the right of the fill level display.



Traffic - Extend planned playlist duration


- d. (Optional) Repeat steps a to c to add more shows to the playlist.


The shows are added to the playlist. The start time of each added show is calculated accordingly, depending on the planned start time of the playlist and the duration of previously added shows.



**Tip**


You can manually adjust the start time of each added show. To set a fixed start time, proceed as follows:

- 1 - Click the **Clock** icon  in the **Start** column of the corresponding row.
- 2 - In the **Set fixed time** dialog, set **Start Date** and **Start Time**.
- 3 - Click **Confirm**.

To deactivate the fixed start time afterward, click the **Clock** icon  again.

**Tip**

To delete a show from the playlist, proceed as follows:

- 1 - Select the show to be deleted and click the **Options** icon .
- 2 - Select **Remove**.
- 3 - In the confirmation dialog click **Remove**.

**Tip**

To change the show order of the playlist, proceed as follows:

- 1 - Select the show to be moved.
- 2 - Move it up or down within the show order via drag and drop.

**Tip**

To open and edit a show directly from the playlist, select a show in the playlist and click **Open** at the right end of the corresponding row.

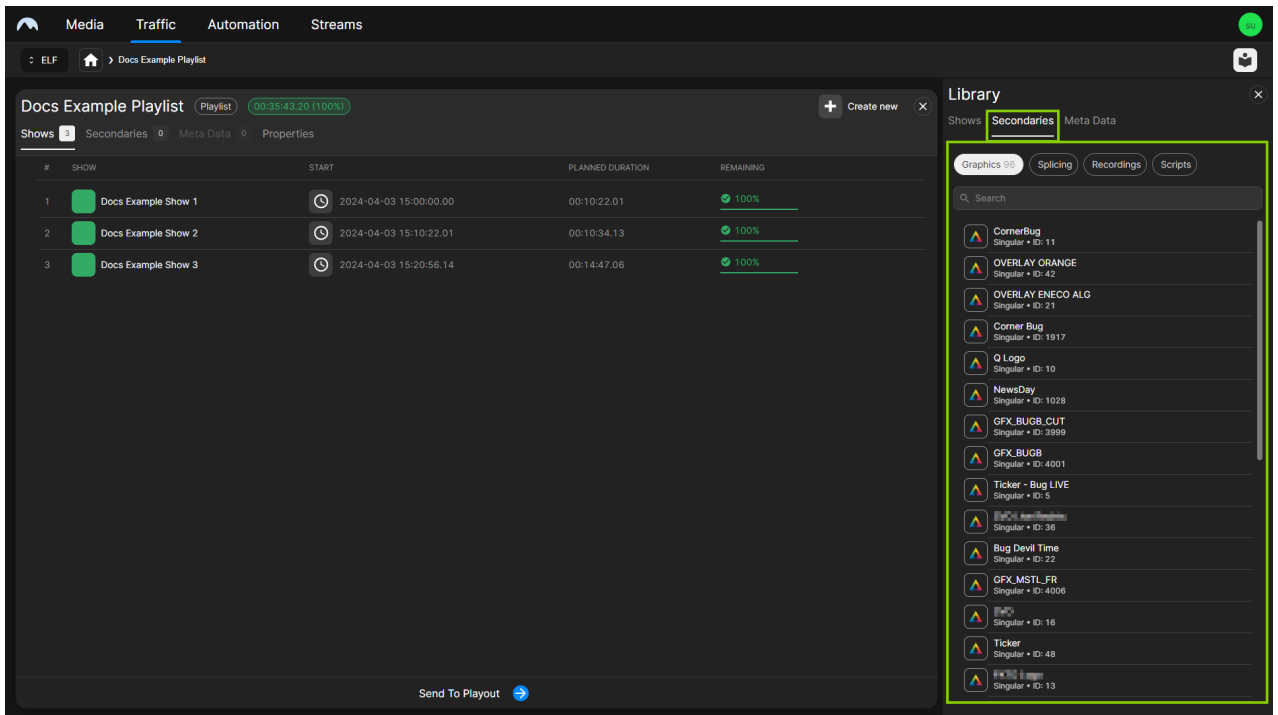
## 4. (Optional) Add secondary events to the playlist.

**Notice**

Graphics secondary events can be added to playlists, shows, and clips. If you add graphics to a playlist, they are displayed in addition to added show and clip graphics.

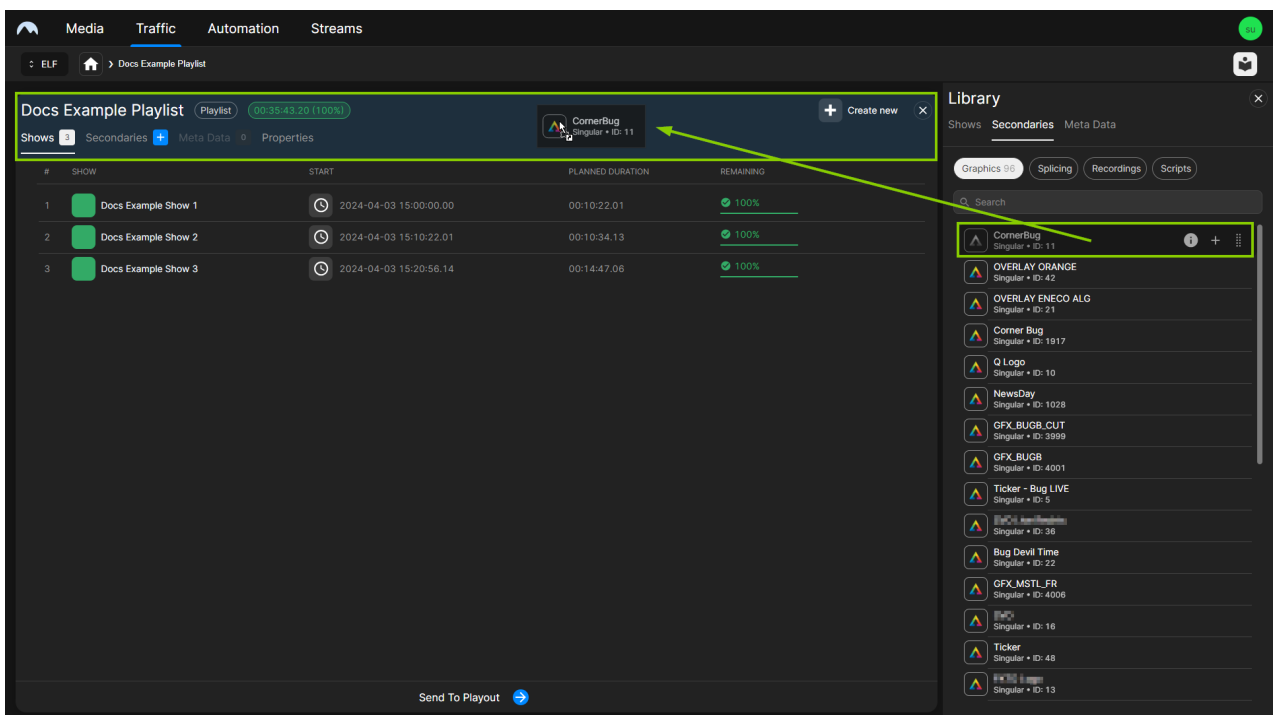
- a. On the right side in the **Library** select the **Secondaries** tab and below the type of secondary event you want to add (for example, **Graphics**, **Splicing**, **Recordings**, or **Scripts**).

*Available secondary events of the selected type are displayed below.*



*Traffic - Secondary events*

- (Optional) To search for secondary events, use the search field above the list of available secondary events.
- To add a secondary event to the playlist, drag it from the library on the playlist information area. Alternatively, you can select the secondary event in the library and click the **Plus** icon at the right end of the corresponding row.

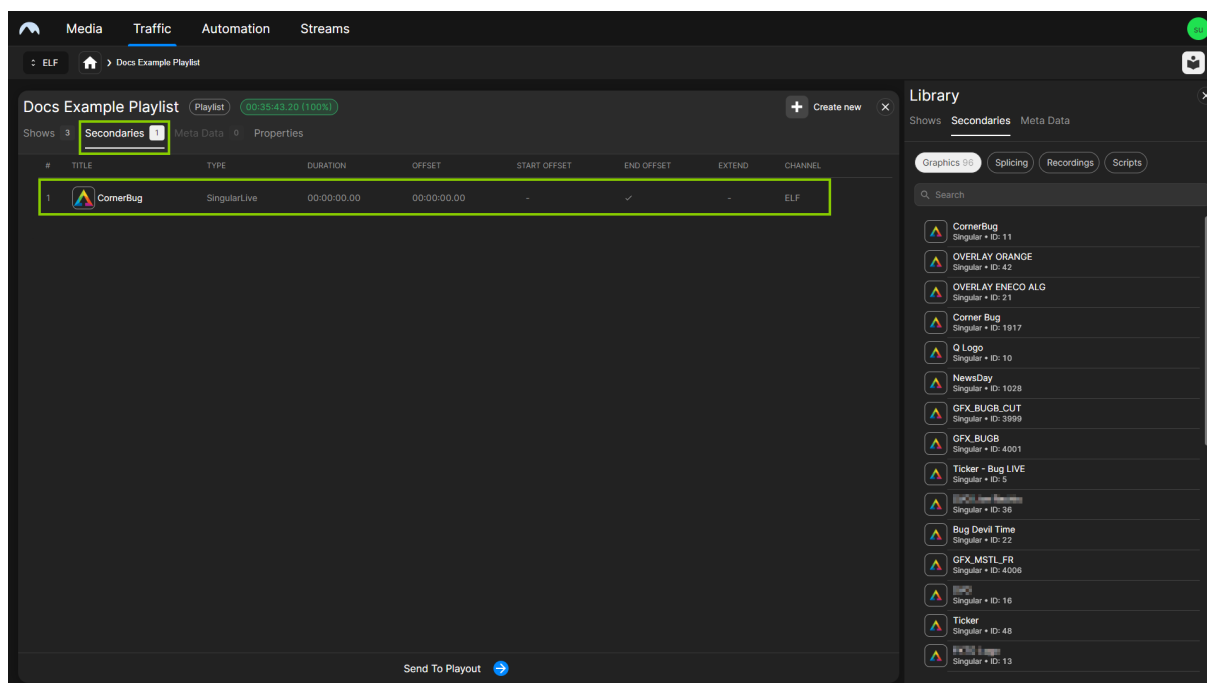


*Traffic - Add a secondary event to a playlist*


*The secondary event is added to the playlist.*

### Tip

To display a list of secondary events that are already added to the playlist, select the tab of the corresponding secondary event type (for example, **Graphics**). The number displayed after the tab name indicates how many secondary events of each type are currently added to the playlist.





Traffic - Secondary event added to a playlist

- d. (Optional) Repeat the previous two steps to add more secondary events to the playlist.
- e. (Optional) To edit the properties of the added secondary event, expand it by clicking the **Expand** icon  on the right.


The add-on properties are displayed in the **add-on details** area.

### Tip

You can expand and collapse the **Objects** area via the **Expand**  and **Collapse**  icons in the top right. This is useful if you want to display an extensive list of add-on properties. Collapsing the **Objects** area allows you to use most of the right side for displaying the details of an add-on.

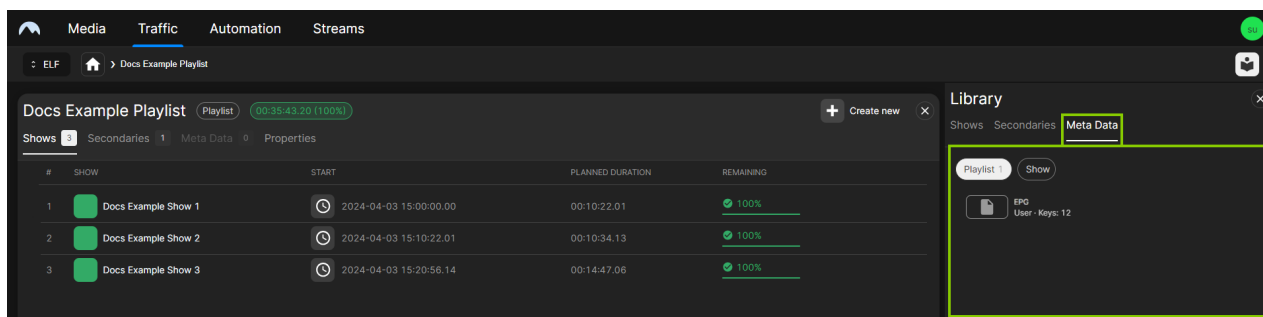
### Tip

To delete an added secondary event, proceed as follows:

- 1 - Select one or more secondary events to be deleted, by activating the corresponding **Action** checkbox(es).
- 2 - Click the **Delete Add-on** icon .
- 3 - In the subsequently displayed dialog, click **Confirm**.

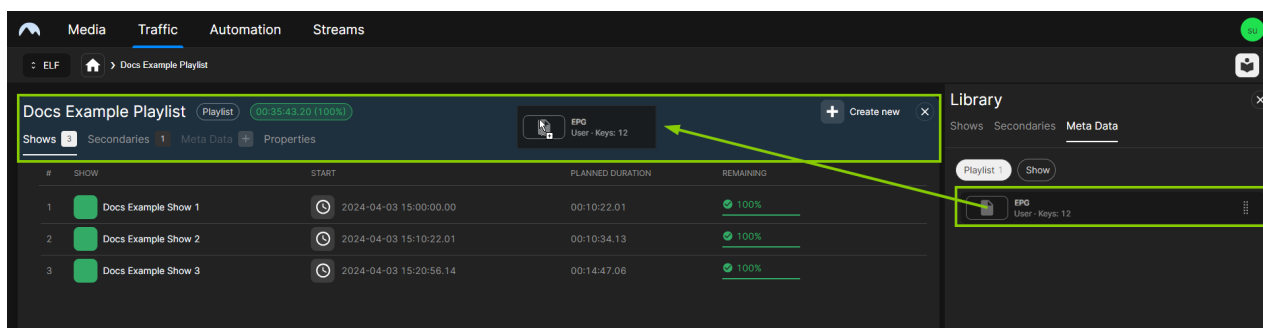
5. (Optional) Add metadata to the playlist.

- a. On the right side in the **Library** select the **Meta Data** tab and below the type **Playlist**.  
Available metadata keysets of the selected meta are listed below.



*Traffic - Available metadata keysets*

- b. To add a metadata keyset to the playlist, drag it from the library and drop it on the playlist information area. Alternatively, you can select the metadata keyset in the library and click the **Plus** icon at the right end of the corresponding row.

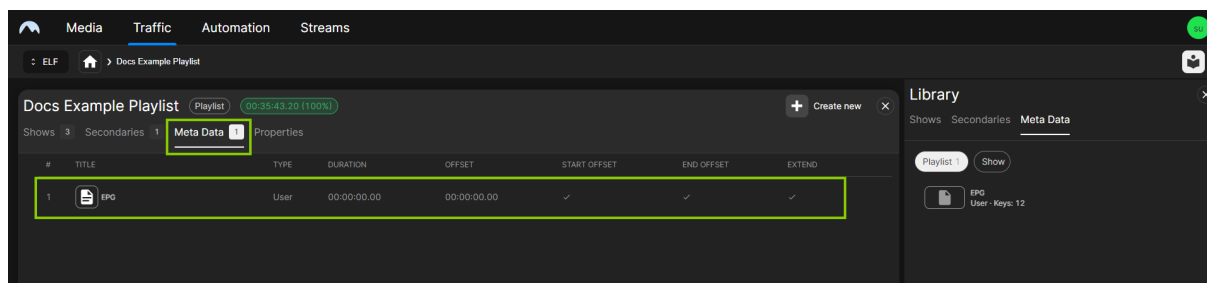


*Traffic - Add a metadata keyset to a playlist*

The metadata keyset is added to the playlist.

### Tip

To display a list of metadata keysets that are already added to the playlist, select the **Meta Data** tab in the playlist information area. The number displayed after the tab name indicates how many metadata keysets are currently added to the playlist.



*Traffic - Metadata keysets added to a playlist*


- c. (Optional) Repeat the previous two steps to add more metadata keysets to the playlist.

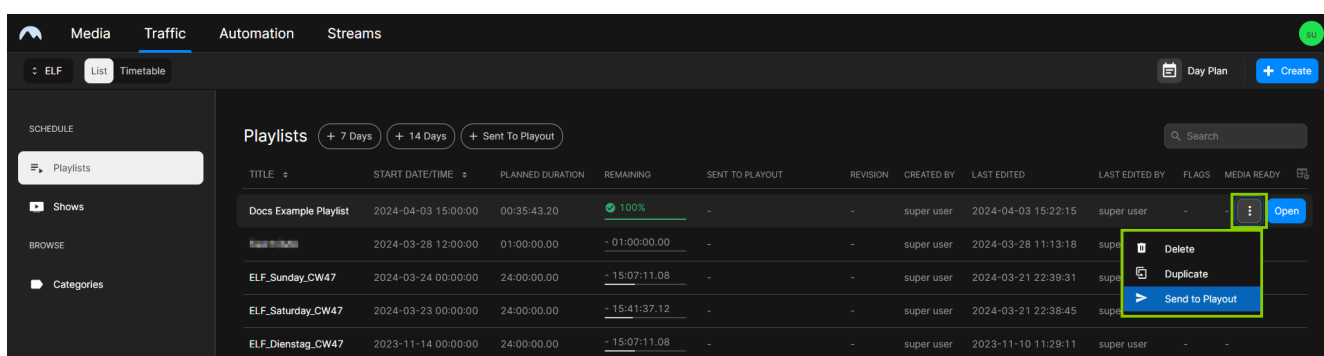
The playlist is saved automatically.

### Sending a playlist to playlist

Before a playlist can be added to the rundown of a channel (see section [Adding a playlist to the rundown](#)), it must first be sent to the playlist.

To send a playlist to playlist, proceed as follows:

1. In the sidebar on the left, select **Playlists**.  
*All available playlists for the currently selected channel are listed in the middle.*
2. Select the playlist to be sent to playlist and click the **Options** icon .
3. Select **Send to Playlist**.




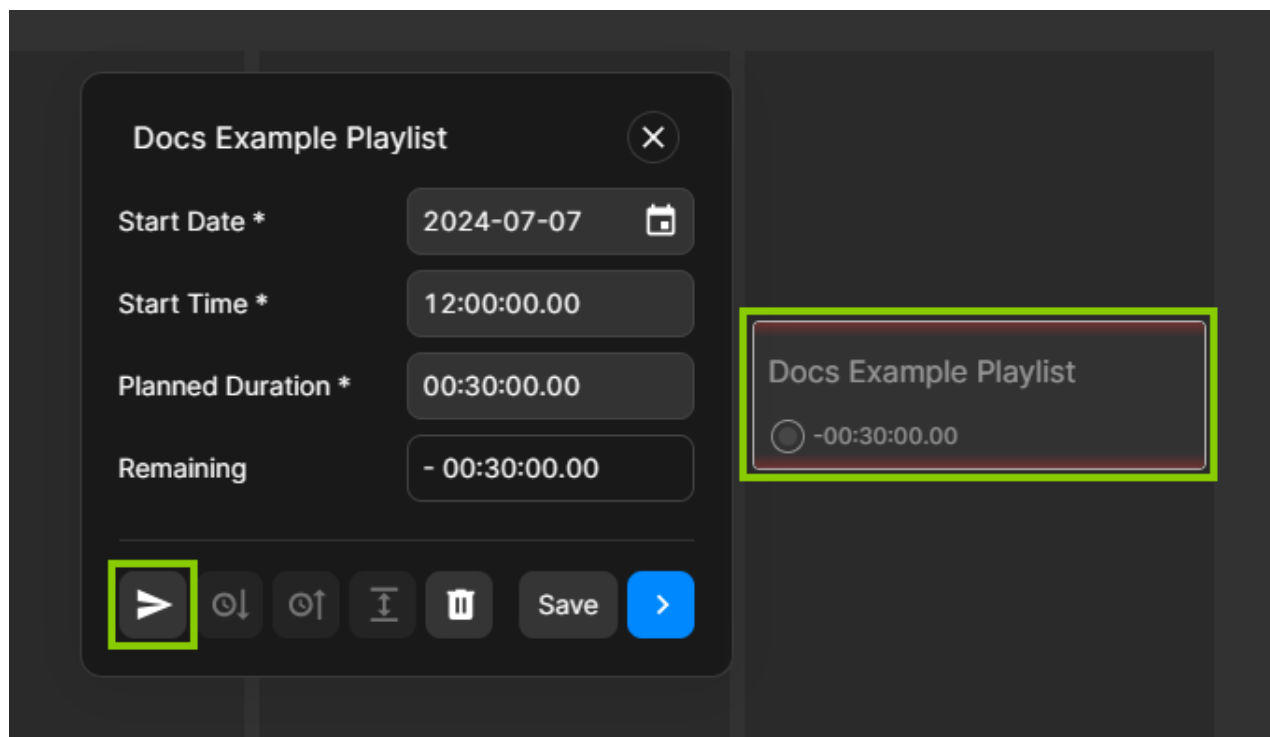
The screenshot shows the 'Traffic' tab in a media management interface. The left sidebar has 'Playlists' selected. The main area displays a table of playlists with columns: TITLE, START DATE/TIME, PLANNED DURATION, REMAINING, SENT TO PLAYLIST, REVISION, CREATED BY, LAST EDITED, LAST EDITED BY, FLAGS, and MEDIA READY. A context menu is open for the 'Docs Example Playlist' row, with the 'Send to Playlist' option highlighted.

TITLE	START DATE/TIME	PLANNED DURATION	REMAINING	SENT TO PLAYLIST	REVISION	CREATED BY	LAST EDITED	LAST EDITED BY	FLAGS	MEDIA READY
Docs Example Playlist	2024-04-03 15:00:00	00:35:43.20	100%	-	-	super user	2024-04-03 15:22:15	super user	-	-
[REDACTED]	2024-03-28 12:00:00	01:00:00.00	-01:00:00.00	-	-	super user	2024-03-28 11:13:18	super user	-	-
ELF_Sunday_CW47	2024-03-24 00:00:00	24:00:00.00	-15:07:11.08	-	-	super user	2024-03-21 22:39:31	super user	-	-
ELF_Saturday_CW47	2024-03-23 00:00:00	24:00:00.00	-15:41:37.12	-	-	super user	2024-03-21 22:38:45	super user	-	-
ELF_Dienstag_CW47	2023-11-14 00:00:00	24:00:00.00	-15:07:11.08	-	-	super user	2023-11-10 11:29:11	super user	-	-

Traffic - Send playlist to playlist

**Tip**

If you are using the **Timetable** view instead of the **List** view, select the playlist and click the **Send to playlist** icon  in the actions menu.



*Traffic - Send playlist to playout in Timetable view*

The playlist is sent to playout. The transfer time is displayed in the **Sent to playout** column.

**Notice**

If you edit a playlist, that was already sent to playout and you export it again, the existing playlist is updated and can be used for the corresponding playout channel.

**Editing a playlist in List view**

To edit a playlist in **List** view, proceed as follows:

1. In the sidebar on the left, select **Playlists**.  
*All available playlists for the currently selected channel are listed in the middle.*
2. Select the playlist to be edited and click **Open** at the right end of the corresponding row.  
*The playlist details are displayed.*
3. Edit the playlist, assigned secondary events, and/or metadata as described in section [Creating a playlist](#).

*The playlist is saved automatically.*


### Editing a playlist in Timetable view

Editing playlist details basically works the same way in the **Timetable** and **List** view. Using the **Timetable** view provides you with the following additional functions:

- You can edit the time properties of a selected playlist directly in the **Timetable** view via the actions menu, either by entering specific time code values or by using the **Snap backward/forward** or **Extend** functions.
- You can add playlists to the timetable and add shows to playlists directly via drag and drop from the library, without having to open the detail view of a playlist first.

#### EDITING PLAYLIST DETAILS

To edit playlist details in **Timetable** view, proceed as follows:

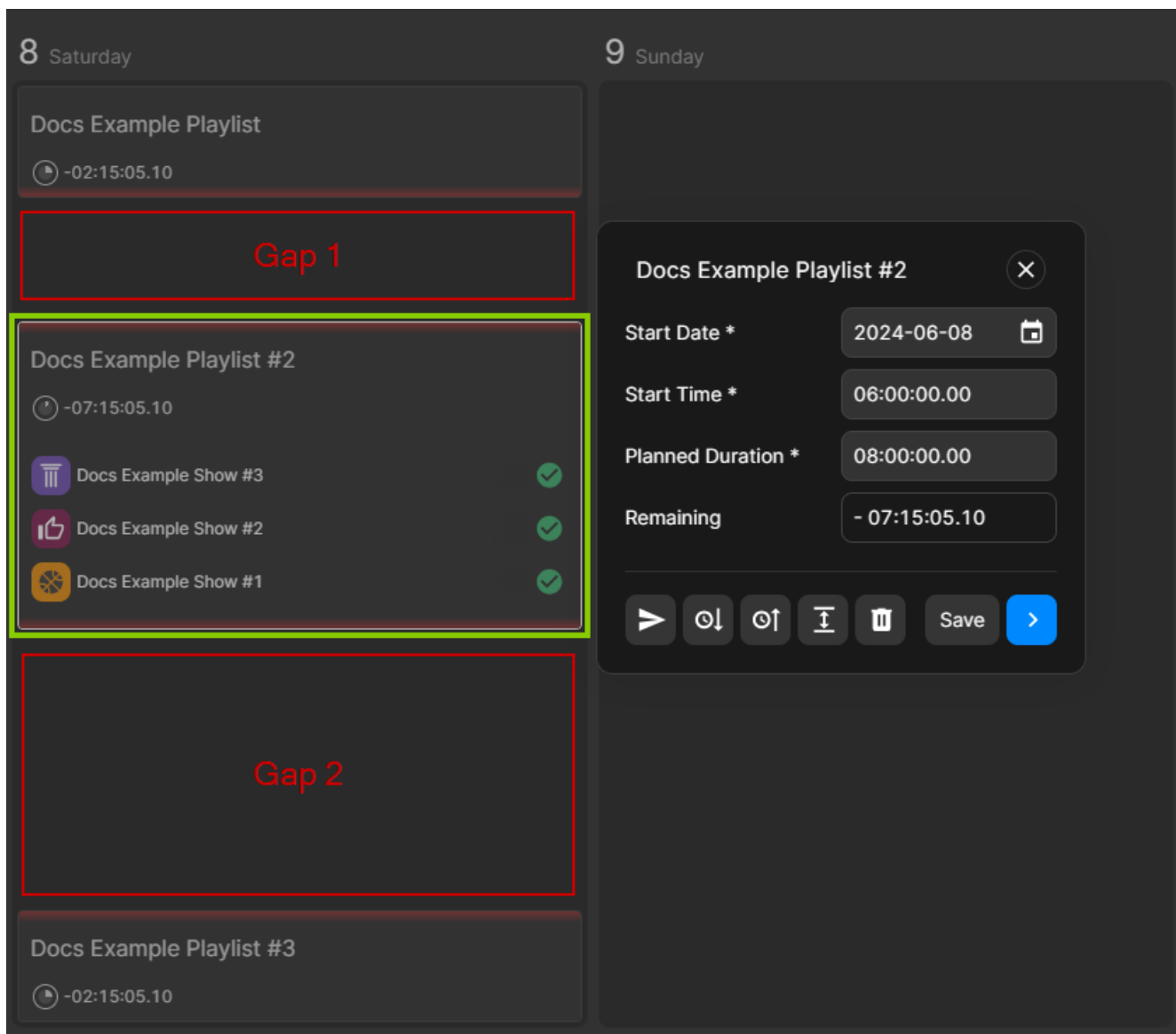
1. In the sidebar on the left, select **Playlists**.  
*All available playlists for the currently selected channel are listed in the middle.*
2. In the **View selector** at the top left select **Timetable**.  
*The Timetable view is displayed.*
3. Use the controls above the timetable to select the week that contains the playlist you want to edit.
4. Select the playlist to be edited and click the **Open** icon  in the actions menu.  
*The playlist details are displayed.*
5. Edit the playlist, assigned secondary events, and/or metadata as described in section [Creating a playlist](#).

*The playlist is saved automatically.*



#### MOVING A PLAYLIST

To move a playlist within the timetable to close a gap to the previous or next playlist, you can use the **Snap backward/forward** functions as follows:

1. Select the playlist to be moved.  
*The actions menu is displayed.*

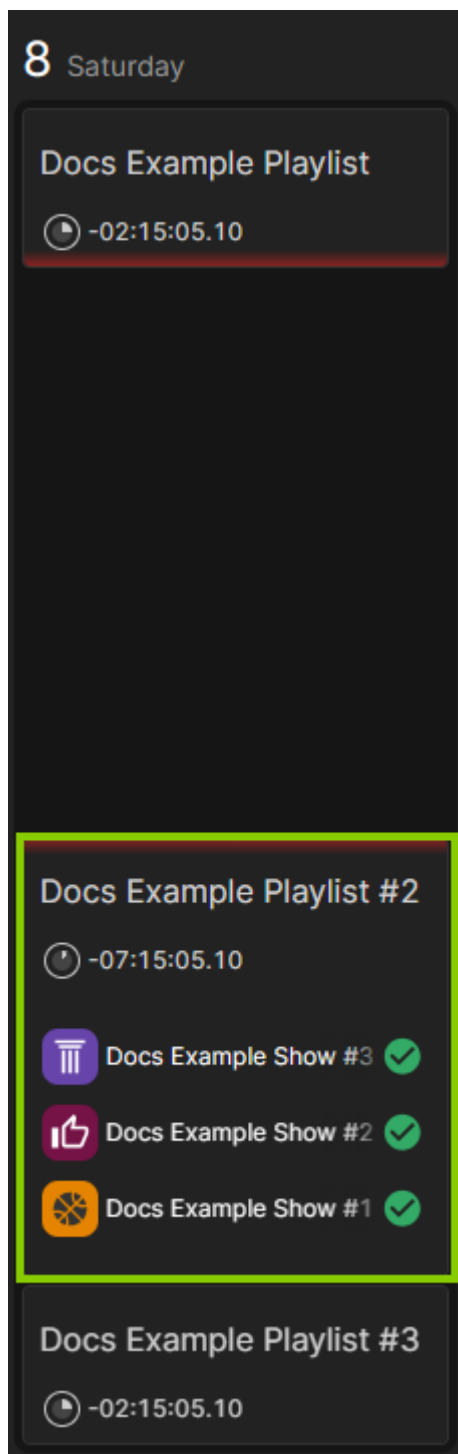


*Traffic - Playlist selected*

2. Depending on where you want to move the playlist, continue as follows:
  - a. If you want to close a gap to the previous playlist (for example, "Gap 1" in the previous figure), click the **Snap backward** icon .
  - b. If you want to close a gap to the next playlist (for example, "Gap 2" in the previous figure), click the **Snap forward** icon .

*The selected playlist is moved accordingly (the planned start time is changed) and the gap is closed.*





*Traffic - Playlist moved to close the gap to the next playlist*

#### EXPANDING A PLAYLIST

To expand a playlist within the timetable to close a gap to the previous and/or next playlist, you can use the **Expand** function as follows:

1. Select the playlist to be expanded.

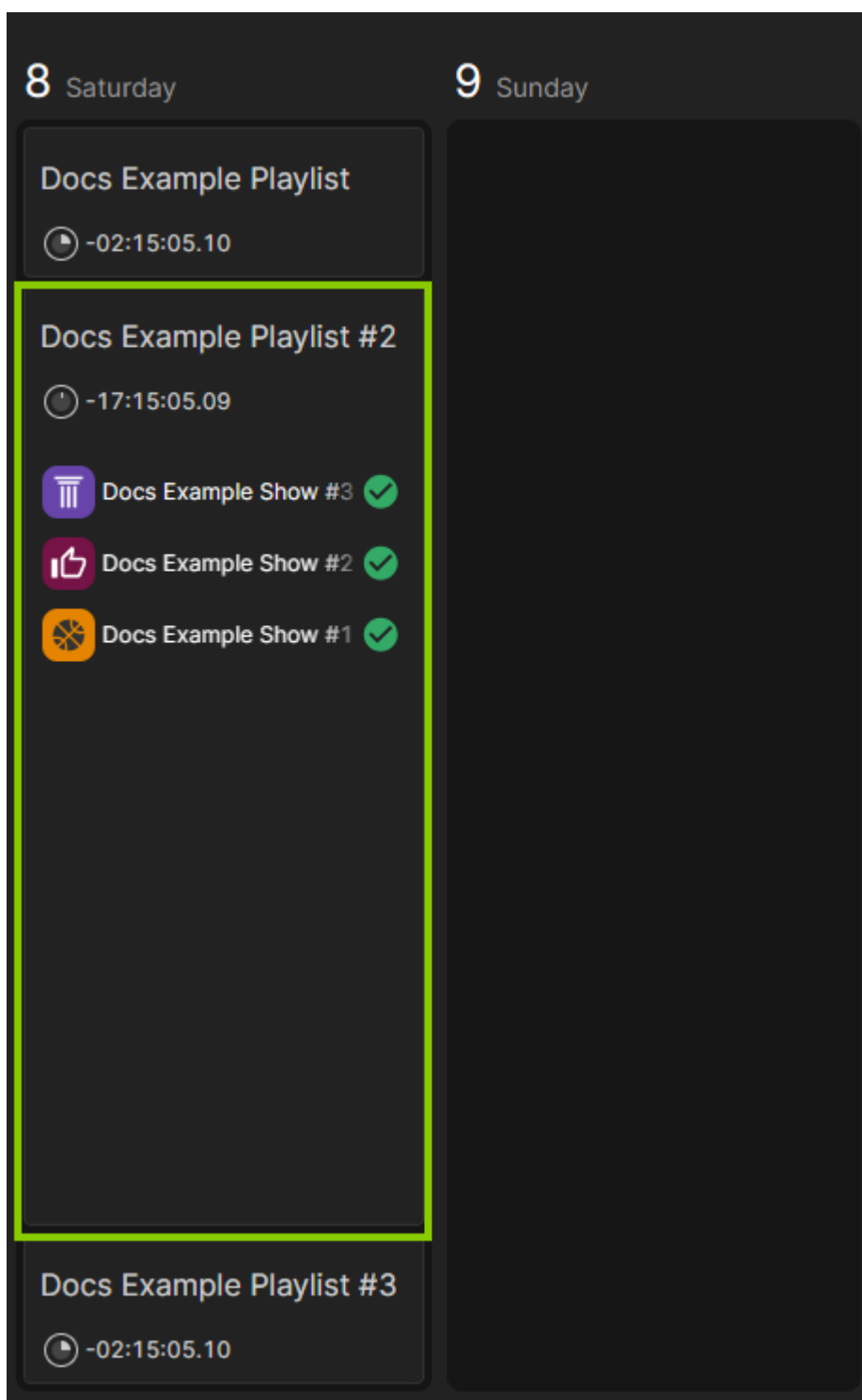
*The actions menu is displayed.*

The screenshot displays a traffic playlist interface. On the left, under '8 Saturday', there are three playlist items: 'Docs Example Playlist' (duration -02:15:05.10), 'Docs Example Playlist #2' (duration -07:15:05.10), and 'Docs Example Playlist #3' (duration -02:15:05.10). 'Docs Example Playlist #2' is highlighted with a green border and contains three items: 'Docs Example Show #3', 'Docs Example Show #2', and 'Docs Example Show #1', each with a green checkmark. Two red boxes labeled 'Gap 1' and 'Gap 2' are positioned between the first and second, and second and third playlist items, respectively. On the right, under '9 Sunday', a detailed view for 'Docs Example Playlist #2' is shown. It includes fields for 'Start Date \*' (2024-06-08), 'Start Time \*' (06:00:00.00), 'Planned Duration \*' (08:00:00.00), and 'Remaining' (-07:15:05.10). At the bottom of this view are control buttons: a play button, a down arrow, an up arrow, an expand icon (I), a trash icon, a 'Save' button, and a right arrow button.

*Traffic - Playlist selected*

2. Click the **Expand** icon

*The start time and planned duration of the selected playlist are updated/expanded accordingly and the gaps are closed.*




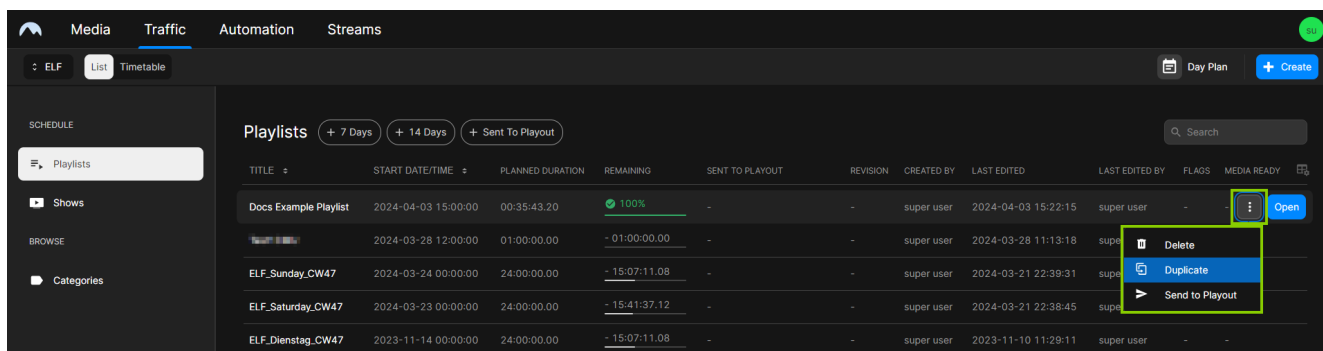
*Traffic - Playlist start time and planned duration updated*

### Duplicating a playlist

To duplicate a single playlist, proceed as follows:

1. In the left sidebar, select **Playlists**.  
*All available playlists are listed in the middle area.*
2. In the list of available playlists select the playlist to be duplicated.

- At the right end of the corresponding row click the **Options** icon  and select **Duplicate**.



*Traffic - Duplicate playlist*

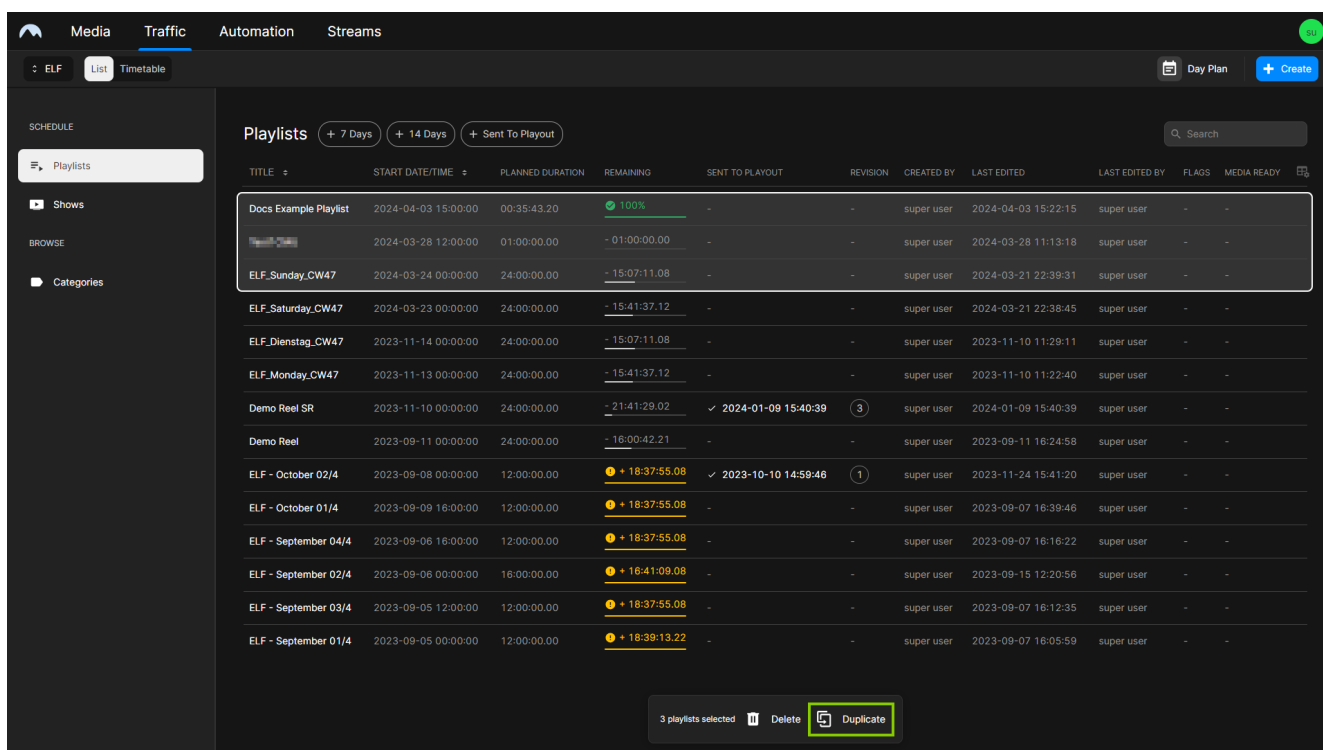
The **Copy Playlist** dialog is displayed.

- In the **Copy Playlist** dialog enter the name to be used for the duplicated playlist.
- Confirm your action, by clicking **Copy playlist**.

The playlist is duplicated.

To duplicate multiple playlists, proceed as follows:

- In the left sidebar, select **Playlists**.  
All available playlists are listed in the middle area.
- Hold **[Ctrl]** or **[Shift]** and in the list of available playlists select the playlists to be duplicated.
- At the bottom of the screen select **Duplicate**.




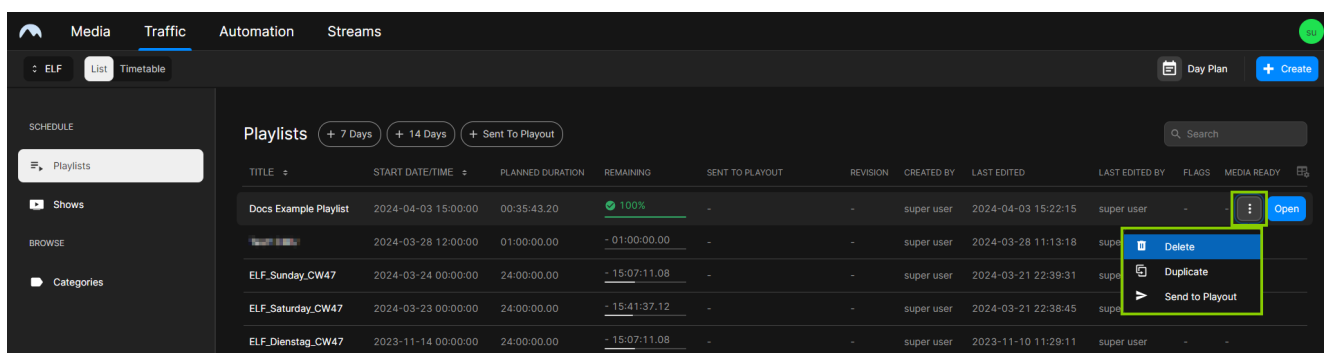
*Traffic - Duplicate multiple playlists*

The selected playlists are duplicated. The duplicated playlists are automatically named by appending "- copy" to the original name.

## Deleting a playlist


To delete a single playlist, proceed as follows:

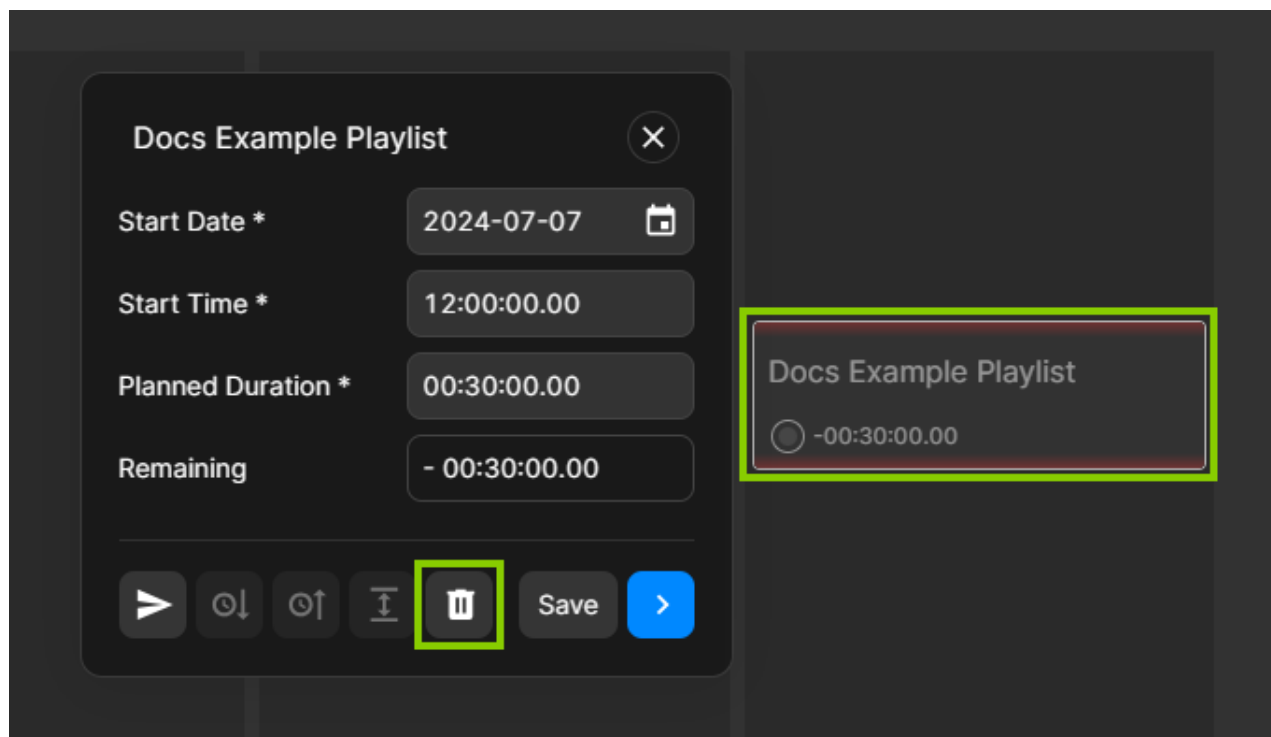
1. In the left sidebar, select **Playlists**.  
*All available playlists are listed in the middle area.*
2. In the list of available playlists select the playlist to be deleted.
3. At the right end of the corresponding row click the **Options** icon  and select **Delete**.  
*A confirmation dialog is displayed.*
4. Confirm your action, by clicking **Delete**.



Traffic - Delete playlist

**Tip**

If you are using the **Timetable** view instead of the **List** view, select the playlist and click the **Delete** icon  in the actions menu.



Traffic - Delete playlist in Timetable view

The playlist is deleted.

To delete multiple playlists, proceed as follows:

1. In the left sidebar, select **Playlists**.  
*All available playlists are listed in the middle area.*
2. Hold **[Ctrl]** or **[Shift]** and in the list of available playlists select the playlists playlist to be deleted.
3. At the bottom of the screen select **Delete**.

The screenshot shows the 'Traffic' section of a software interface. On the left, there is a sidebar with 'SCHEDULE' and 'BROWSE' sections. The main area displays a table of playlists. The table has columns for TITLE, START DATE/TIME, PLANNED DURATION, REMAINING, SENT TO PLAYOUT, REVISION, CREATED BY, LAST EDITED, LAST EDITED BY, FLAGS, and MEDIA READY. Three playlists are selected, and a 'Delete' button is highlighted in the bottom right corner of the table area.

TITLE	START DATE/TIME	PLANNED DURATION	REMAINING	SENT TO PLAYOUT	REVISION	CREATED BY	LAST EDITED	LAST EDITED BY	FLAGS	MEDIA READY
Docs Example Playlist	2024-04-03 15:00:00	00:35:43.20	100%	-	-	super user	2024-04-03 15:22:15	super user	-	-
ELF_Sunday_CW47	2024-03-24 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2024-03-21 22:39:31	super user	-	-
ELF_Saturday_CW47	2024-03-23 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2024-03-21 22:38:45	super user	-	-
ELF_Dienstag_CW47	2023-11-14 00:00:00	24:00:00.00	- 15:07:11.08	-	-	super user	2023-11-10 11:29:11	super user	-	-
ELF_Monday_CW47	2023-11-13 00:00:00	24:00:00.00	- 15:41:37.12	-	-	super user	2023-11-10 11:22:40	super user	-	-
Demo Reel SR	2023-11-10 00:00:00	24:00:00.00	- 21:41:29.02	✓ 2024-01-09 15:40:39	3	super user	2024-01-09 15:40:39	super user	-	-
Demo Reel	2023-09-11 00:00:00	24:00:00.00	- 16:00:42.21	-	-	super user	2023-09-11 16:24:58	super user	-	-
ELF - October 02/4	2023-09-08 00:00:00	12:00:00.00	+ 18:37:55.08	✓ 2023-10-10 14:59:46	1	super user	2023-11-24 15:41:20	super user	-	-
ELF - October 01/4	2023-09-09 16:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:39:46	super user	-	-
ELF - September 04/4	2023-09-06 16:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:16:22	super user	-	-
ELF - September 02/4	2023-09-06 00:00:00	16:00:00.00	+ 16:41:09.08	-	-	super user	2023-09-15 12:20:56	super user	-	-
ELF - September 03/4	2023-09-05 12:00:00	12:00:00.00	+ 18:37:55.08	-	-	super user	2023-09-07 16:12:35	super user	-	-
ELF - September 01/4	2023-09-05 00:00:00	12:00:00.00	+ 18:39:13.22	-	-	super user	2023-09-07 16:05:59	super user	-	-

### Traffic - Delete multiple playlists

A confirmation dialog is displayed.

- Confirm your action, by clicking **Delete**.

The selected playlists are deleted.

### Playlist properties

The following table provides an overview of all available playlist properties:

#### Notice

Time-related properties use a frame-accurate notation in the format `hh:mm:ss.ff`. The frame rate time base is part of the global system configuration. Makalu supports the frame rates 25, 29.97, 30, 50 and 60 fps.

Property	Description
Playlist Title	Title of the playlist
Planned Duration	Planned duration of the playlist
Start Date	Planned start date of the playlist
Start Time	Planned start time of the playlist
Description	Text description for the playlist


## 2.3.3 Using shows


### Using the Shows view

To open the **Shows view**, select **Shows** in the sidebar on the left. It provides an overview of all available shows of the currently selected channel. The list of shows can be narrowed, by using the search field at the top right.

TITLE	CATEGORY	PLANNED DURATION	REMAINING
Docs Example Show 3	Entertainment	00:14:47.06	100%
Docs Example Show 2	Entertainment	00:10:34.13	100%
Docs Example Show 1	Entertainment	00:10:22.01	100%
Journal Bodensee - copy2	Health	01:15:59.08	- 00:05:17.15
Journal Bodensee - copy	Health	01:15:59.08	+ 00:03:46.15
Journal Bodensee - copy	Health	01:15:59.08	+ 01:59:52.19
Documentation Sample Show 2	Sports	01:30:00.00	- 01:27:08.02
Documentation Sample Show	Sports	02:20:06.19	100%
Journal Bodensee	Health	01:15:59.08	100%
Journal des Tages	Education	00:30:00.00	- 00:55:33.21
Documentation Example Show	Technology	01:00:00.00	+ 01:00:53.06
Daily News	Education	01:00:00.00	- 00:57:59.24
Finals	Sports	01:00:00.00	+ 00:25:49.05
Matchday 5-6	Sports	02:16:51.17	100%

### Traffic - Shows

By default, a selection of available columns is displayed. To customize the columns, click the **Column selection** icon  at the top right and select the columns to be displayed.

Additional functions (**Duplicate** and **Delete**) are available per show via the **Options** icon  on the right side of each show row. You can create a new show, by clicking **Create** at the top right.

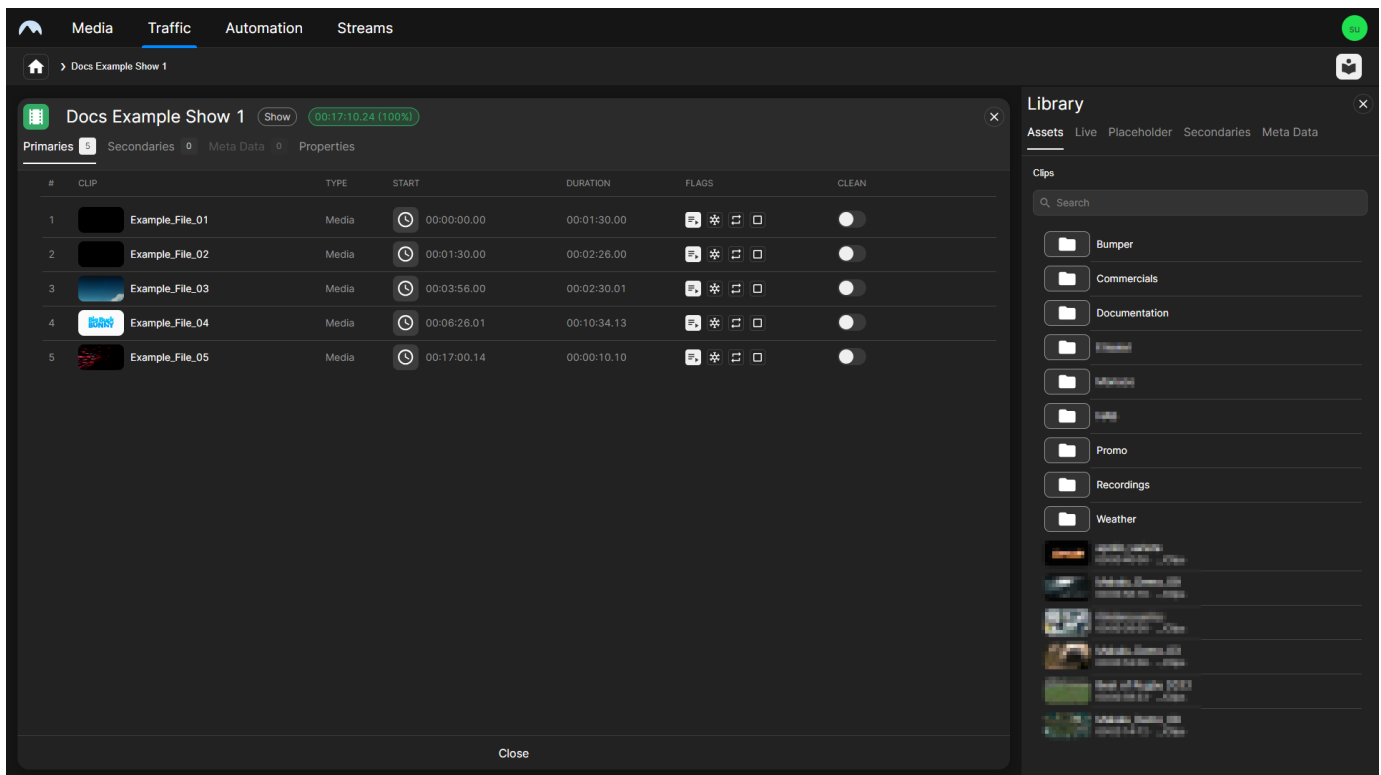
To display a detailed view of a show, hover your mouse over the show and click **Open**.

TITLE	CATEGORY	PLANNED DURATION	REMAINING
Docs Example Show 3	Entertainment	00:14:47.06	100%
Docs Example Show 2	Entertainment	00:10:34.13	100%
Docs Example Show 1	Entertainment	00:10:22.01	100%
Journal Bodensee - copy2	Health	01:15:59.08	- 00:05:17.15


### Traffic - Open show details



At the top of the detailed show view the fill level is displayed and below tabs for included primary events (clips), secondary events, metadata, and show properties. To the right the library of assets/clips, live sources, placeholders, secondary events, and metadata is displayed. Depending on the type of the selected library item tab, a sub-selection may be available via additional tabs (for example, to select a specific secondary event or metadata type).



*Traffic - Show details and library*

When the detailed view of a show is opened, the library lists all available items that can be added to a show or clip. It can be displayed or hidden, by clicking the **Library** icon  at the top right.

Depending on where you want to add a clip, the following options are available to you for this purpose:

1. Adding a clip as the last clip of a show, by dragging it onto the area above the clip list.
2. Adding a clip at a specific position, by dragging it onto the position in the clip list (for example, between two clips).
3. Replacing a clip, by dragging the new clip onto the existing clip and confirming the replacement.

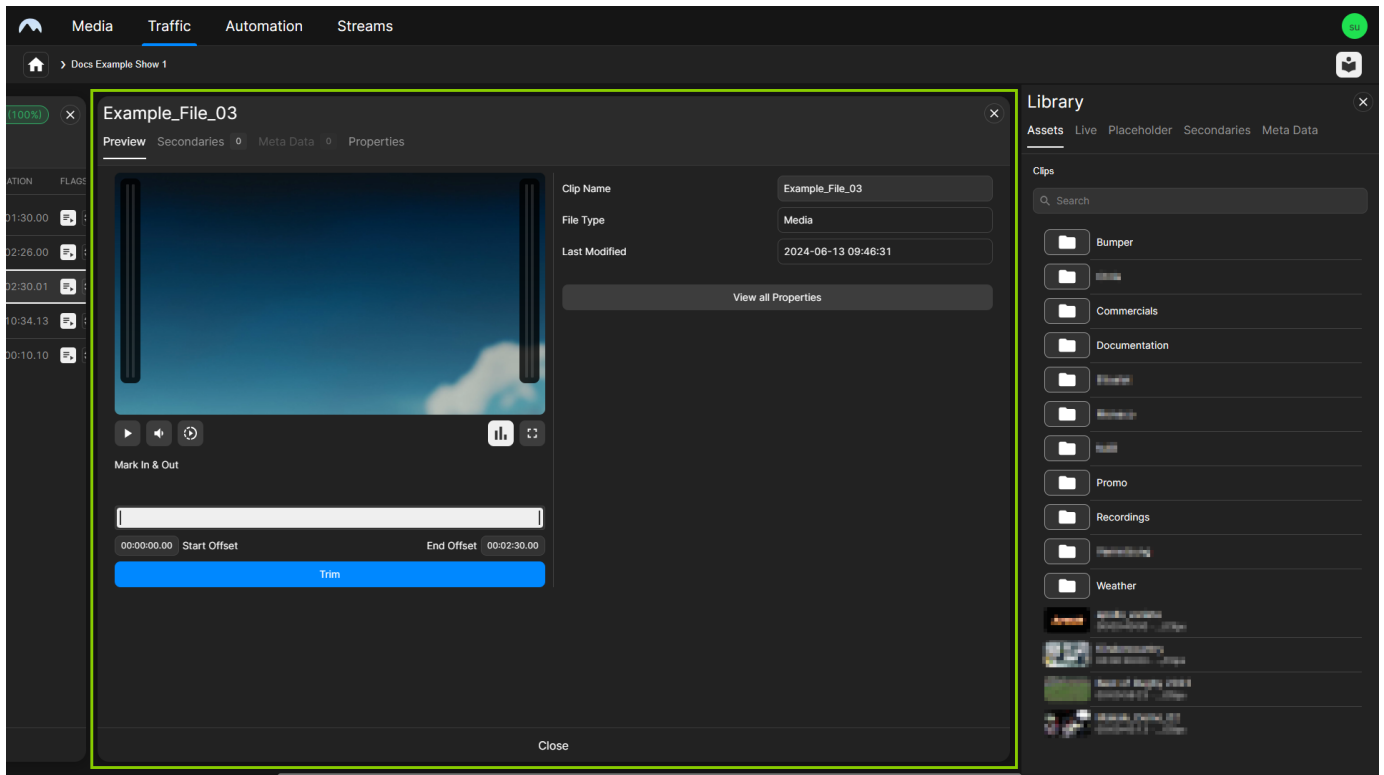
You can also change the order of the clip list via drag and drop.

Additionally, the clip list includes icons for setting [clip flags](#), enabling/disabling graphics, and removing clips from the list.

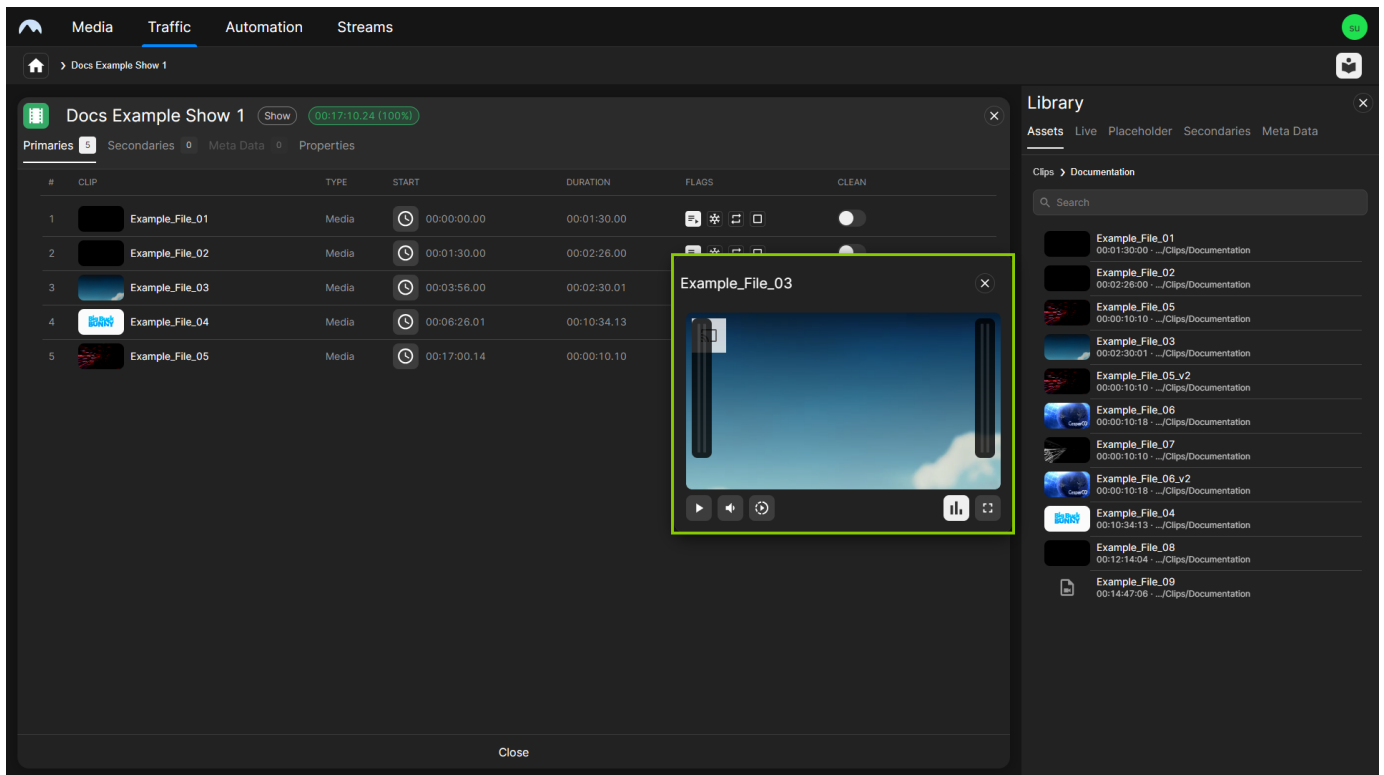
You can open the detailed view of a clip, by hovering your mouse over the clip in the clip list and clicking **Open** on the right side of the corresponding row. This view provides access to the clip preview, clip properties, as well as assigned secondary events and metadata.

### Using the Preview

The Traffic UI includes a preview player that enables you to preview video files and live sources, either by opening the corresponding clips of a show or the corresponding assets in the library.









Traffic - Clip preview



Traffic - Asset preview

Regardless of whether you open clips or assets, the preview player always provides the following default controls:

Icon	Description
	Start/pause playback
	Restart playback from the beginning
	Mute/unmute audio
	Change playback speed
	Show/hide audio peak meter
	Toggle full-screen playback

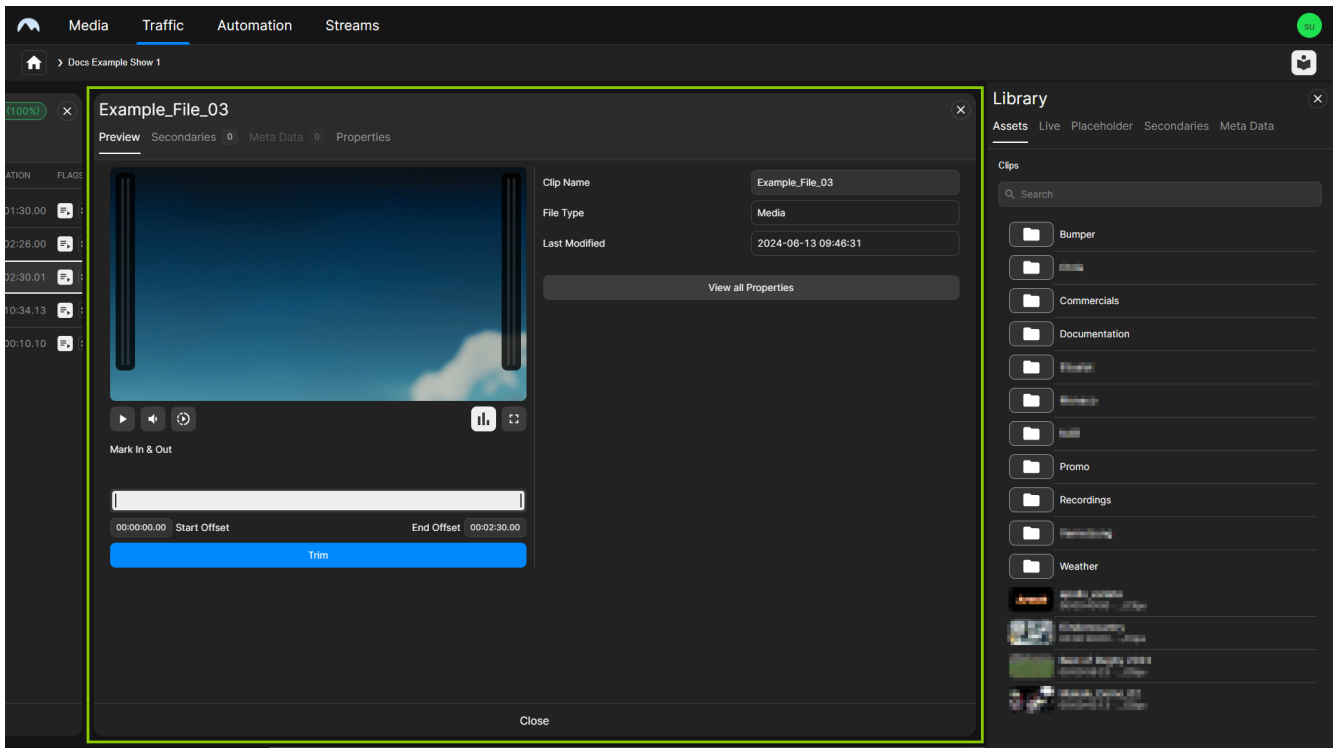
Below these controls, you can find the **Mark In & Out** area with a trim bar and input fields for start and end offset. For more information about trimming, see section [Trimming a clip](#).

#### **i** Notice


The **Mark In & Out** area is only available if you open a clip of a show, but not if you open an asset from the library.

To preview a clip of a show, proceed as follows:

1. In the left sidebar, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
2. Hover your mouse over the show that contains the clip to be played and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*
3. Hover your mouse over the clip to be played and click **Open** on the right side of the corresponding row.  
*The clip details are displayed.*



*Traffic - Clip details incl. preview*

- To start the preview playback, click the **Play** icon  below the preview player.

*The preview playback starts.*

- Use the preview player controls to control the playback.

*The preview plays accordingly.*

#### Notice

When previewing a live source, some of the preview player controls are not available (for example, the control for changing the playback speed).

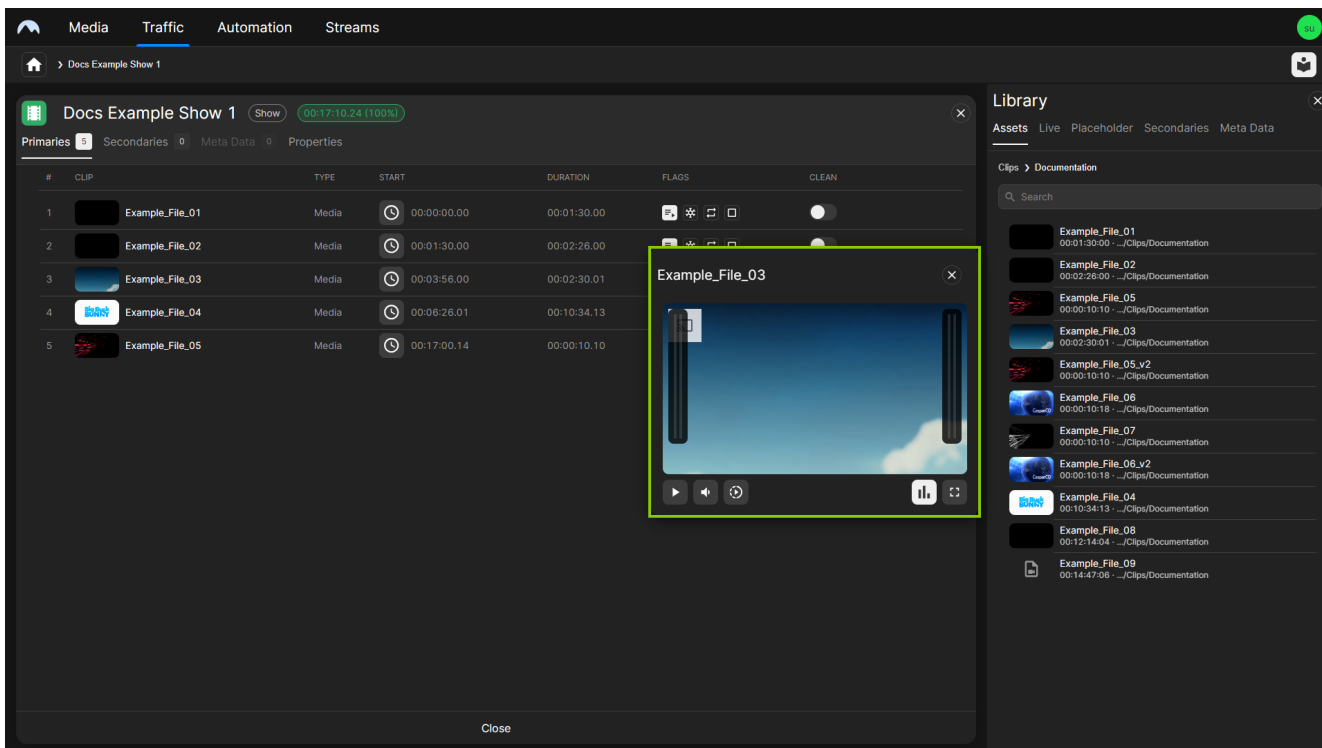
To preview assets from the library, proceed as follows:

- In the left sidebar, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
- Hover your mouse over any show and click **Open** on the right side of the corresponding row.  
*The show details are displayed. The library is displayed on the right.*
- Depending on if you want to preview a video file or a live source, proceed as follows:
  - If you want to preview a video file, select the **Assets** tab in the library. Select the folder that contains the file to be played, hover your mouse over the file, and click the **Play** icon.
  - If you want to preview a live source, select the **Live** tab in the library. Hover your mouse over the live source to be played, and click the **Play** icon.

### Notice

When previewing a live source, some of the preview player controls are not available (for example, the control for changing the playback speed).

The preview player opens to the left of the library and the preview playback starts.



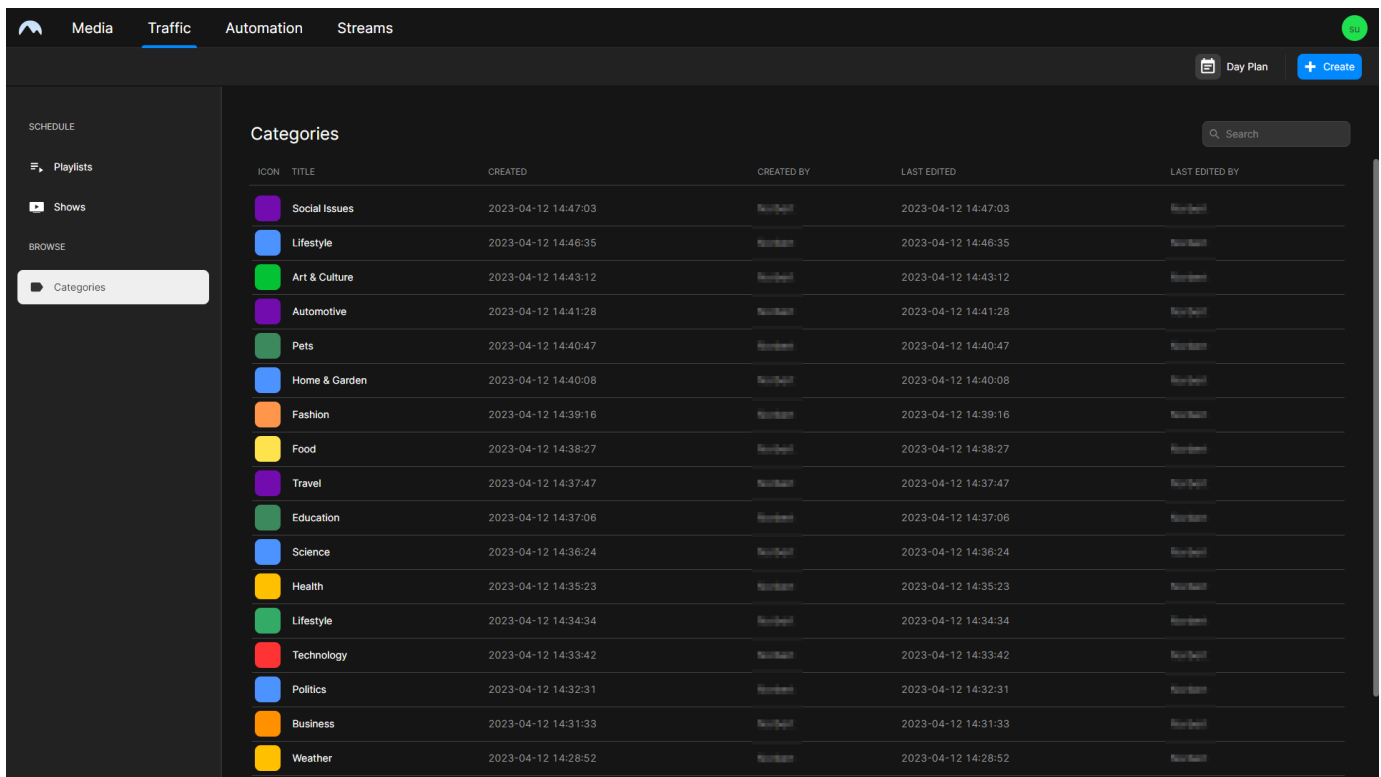
Traffic - Asset preview

- Use the preview player controls to control the playback.

The preview plays accordingly.


### Using the Categories view

To open the **Categories view**, select **Categories** in the sidebar on the left. It provides an overview of all available categories, which are used to organize the content of shows.



### Traffic - Show categories

The list of show categories can be narrowed, by using the search field at the top right.

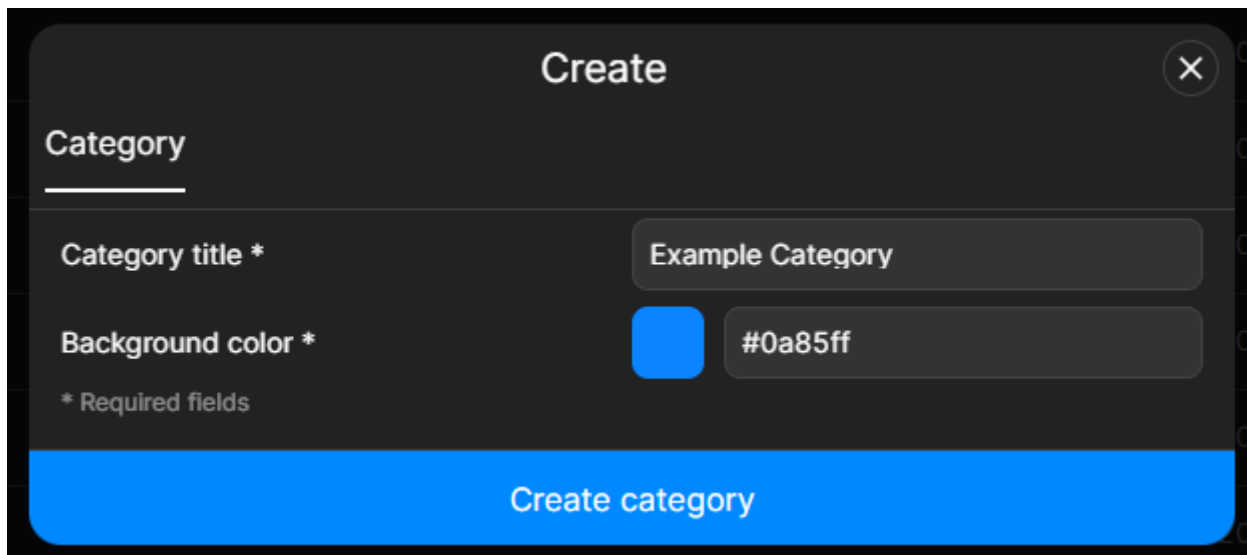
Additional functions (**Edit** and **Delete**) are available per show category via the **Options** icon  on the right side of each show category row.

You can create a new show category, by clicking **Create** at the top right above the list of show categories. This opens a dialog that enables you to specify the category properties.

### Creating a show category

To create a show category, proceed as follows:

1. In the sidebar on the left, select **Categories**.  
*All available show categories are listed in the middle.*
2. At the top right click **Create**.  
*The **Create** dialog is opened.*
3. Enter the **Category title** and select a **Background color**.

A dark-themed dialog box titled "Create" with a close button (X) in the top right corner. The dialog is titled "Category" and has two required fields: "Category title \*" with the value "Example Category" and "Background color \*" with a blue color swatch and the hex code "#0a85ff". A legend below the fields indicates that "\*" denotes required fields. At the bottom of the dialog is a large blue button labeled "Create category".

*Traffic - Create a new show category*

4. Click **Create category**.

*The category is created with the selected properties and can be used when creating or editing a show.*

#### **Creating a show**

To create a show, proceed as follows:

1. In the sidebar on the left, select **Shows**.  
*All available shows are listed in the middle.*
2. In the top right click **Create**.

The screenshot shows the 'Traffic' tab of a media management system. The interface includes a top navigation bar with 'Media', 'Traffic', 'Automation', and 'Streams'. A 'Day Plan' button and a '+ Create' button are visible in the top right. The main content area is titled 'Shows' and contains a table with the following data:

TITLE	CATEGORY	PLANNED DURATION	REMAINING
Docs Example Show 3	Entertainment	00:14:47.06	100%
Docs Example Show 2	Entertainment	00:10:34.13	100%
Docs Example Show 1	Entertainment	00:17:10.24	100%
Journal Bodensee - copy2	Health	01:15:59.08	- 00:05:17.15
Journal Bodensee - copy	Health	01:15:59.08	+ 00:03:46.15
Journal Bodensee - copy	Health	01:15:59.08	+ 01:59:52.19
Documentation Sample Show 2	Sports	01:30:00.00	- 01:27:08.02
Documentation Sample Show	Sports	02:20:06.19	100%
Journal Bodensee	Health	01:15:59.08	100%
Journal des Tages	Education	01:00:00.00	- 00:55:33.21
Journal des Tages	Education	00:30:00.00	- 00:29:29.05
Journal des Tages	Education	00:30:00.00	- 00:01:54.14
Documentation Example Show	Technology	01:00:00.00	+ 01:00:53.06
Daily News	Education	01:00:00.00	- 00:58:44.09
Daily News	Education	01:00:00.00	- 00:57:59.24
Finals	Sports	01:00:00.00	+ 00:25:49.05
Matchday 5-6	Sports	02:16:51.17	100%

### Traffic - Create show

The **Create** dialog is displayed.

3. In the **Show** tab set the basic show properties and fill in all required fields.



**Create**

Playlist **Show**

Show title \* Docs Example Show

Planned duration \* 01:00:00.00

Category \* Technology

An example show for documentation purposes. 43/260

\* Required fields

**Create show**

*Traffic - Set basic show properties*

- To create the show with the selected properties, click **Create show**.

*The show is created and the list of available shows is displayed again.*

Since the newly created show is initially empty, the next step is to add content (primary and secondary events) to the show.

To add content to the show, proceed as follows:

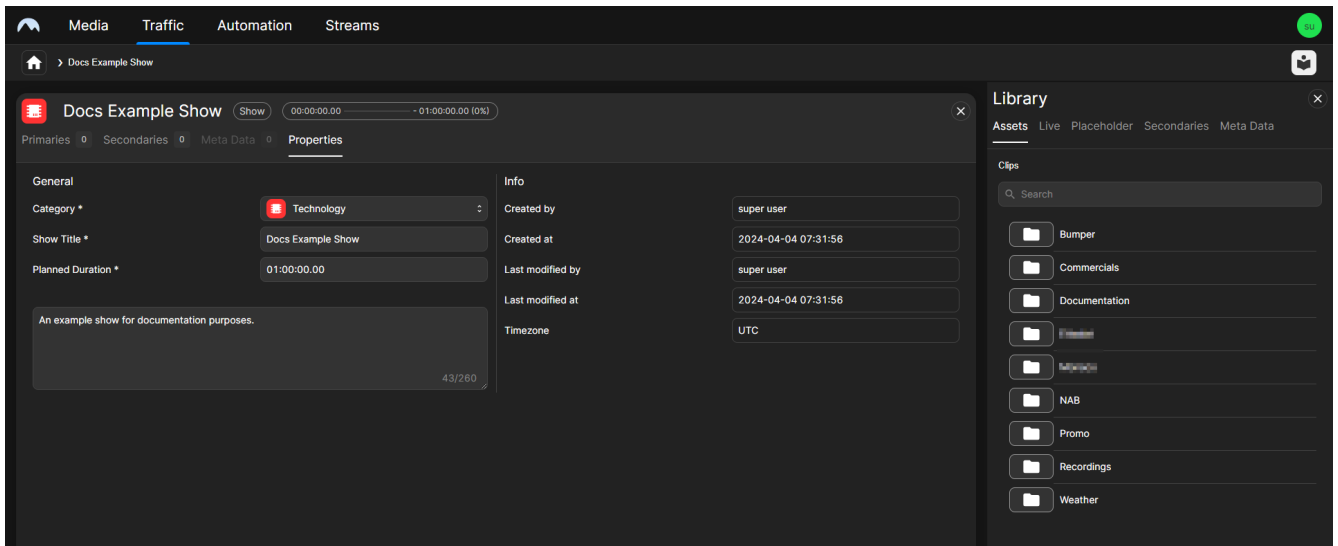
- Open the show, by selecting it in the list of available shows and click **Open** on the right side of the corresponding row.

TITLE	CATEGORY	PLANNED DURATION	REMAINING	
Docs Example Show	Technology	01:00:00.00	- 01:00:00.00	Open
Docs Example Show 3	Entertainment	00:14:47.06	100%	
Docs Example Show 2	Entertainment	00:10:34.13	100%	
Docs Example Show 1	Entertainment	00:17:10.24	100%	

*Traffic - Open show*

*The show is opened.*

- (Optional) Edit the basic [show properties](#) in the **Properties** tab and confirm your changes, by clicking **Apply Changes** at the bottom of the screen.

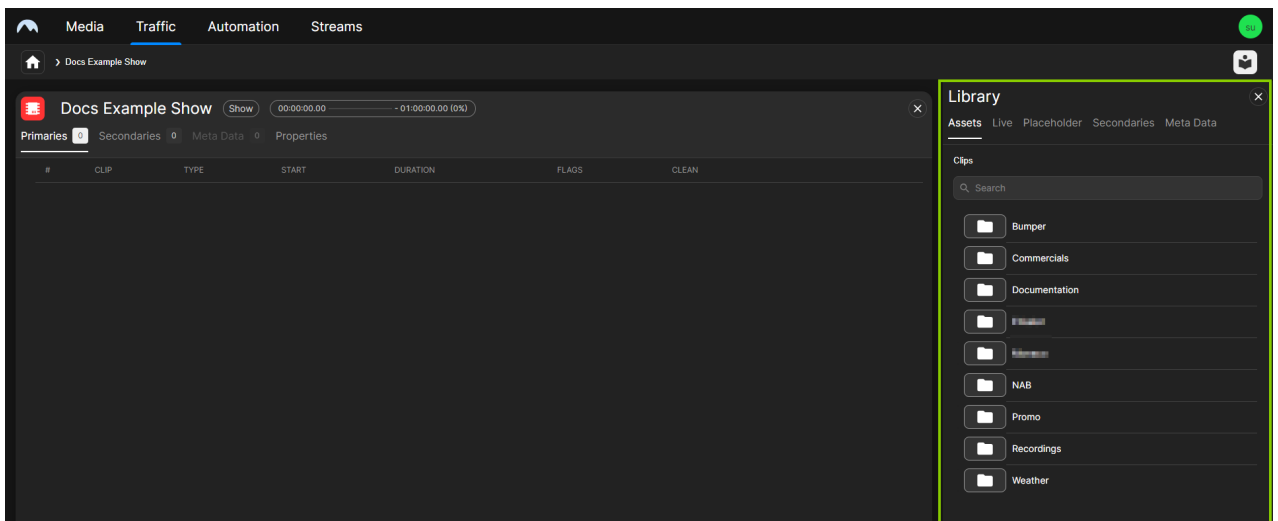


*Traffic - Edit basic show properties*

3. Add one or more primary events to the show, by proceeding as follows:
  - a. Depending on the type of primary event you want to add, select the corresponding tab in the library, either **Assets** (file-based content), **Live** (live sources), or **Placeholder** (virtual placeholders).  
*All available items of the selected type are listed below.*

**Tip**

To filter the available items, use the search field above the list.



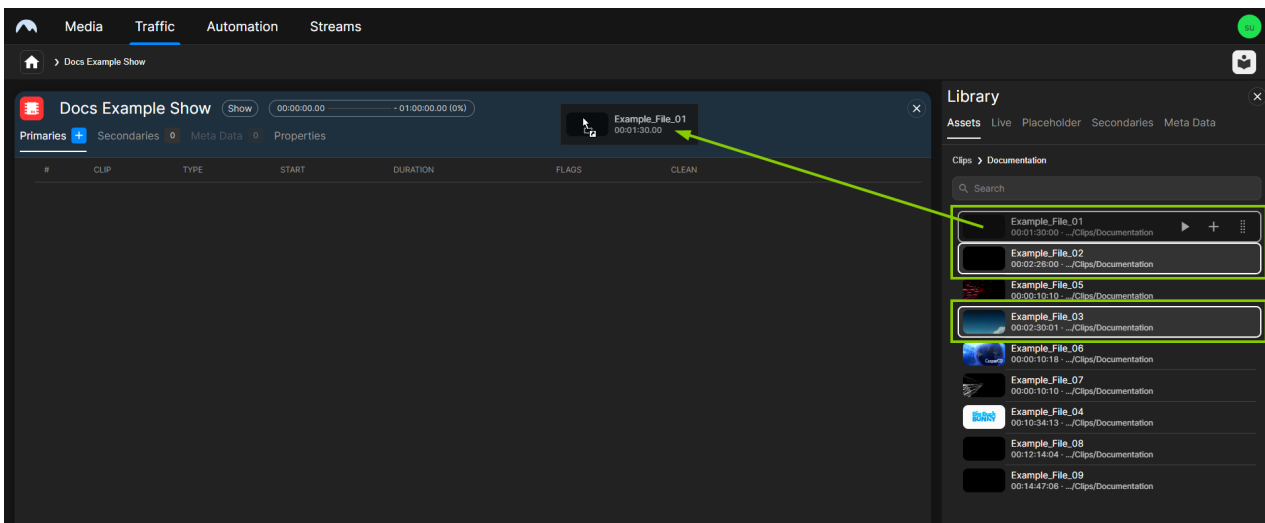
*Traffic - Library of available assets*

**Notice**

For detailed information about the types of primary events and the other elements used in the planning concept, see section [Schedule > Overview](#).

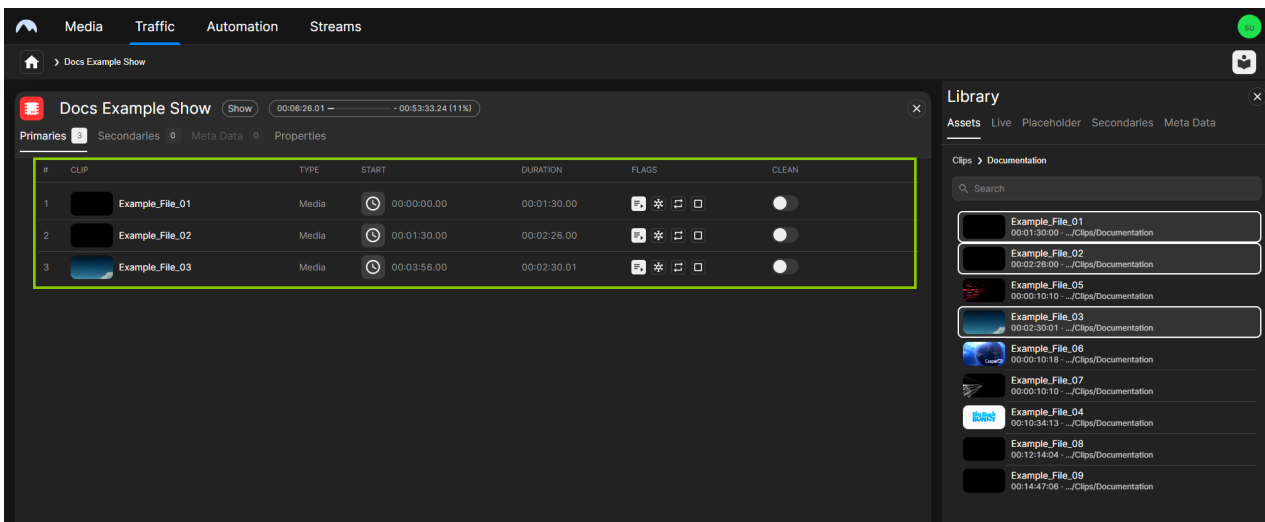
- b. Add one or more primary events to the show, which turns them into clips. To add them at the end of the show, select the corresponding items in the library and drag and drop them in the information area at the top of the show. Alternatively, you can insert one or more items at a specific position within the show, by dragging and dropping them on the desired position within the clip order.

**Tip**  
Adding a live source requires you to set the planned duration of the live event.



Traffic - Add clips to a show

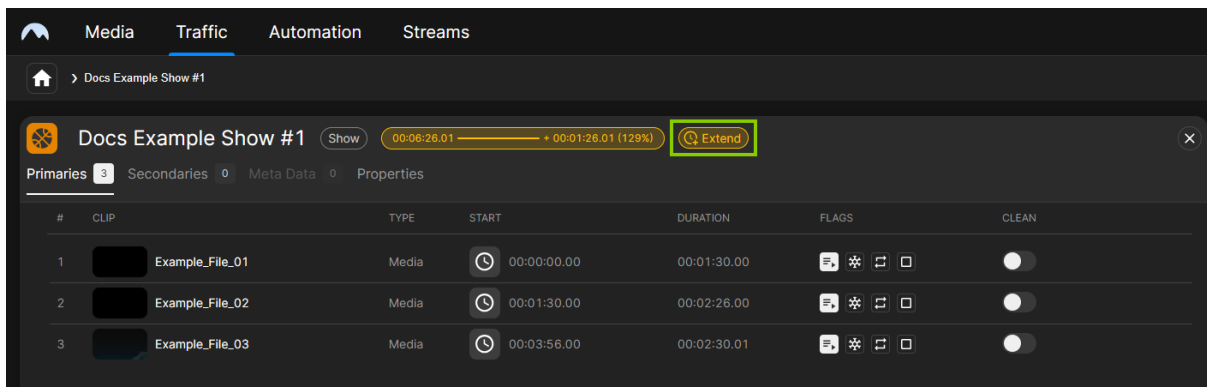
The clips are added to the show. The fill level display at the top is updated accordingly.



Traffic - Clips added to a show

### Tip

If the total duration of the added clips exceeds the planned duration of the show, the show is considered "overfilled" and the fill level is highlighted accordingly. If you want to extend the planned duration of the show to the total duration of the added clips, click **Extend** to the right of the fill level display.




Traffic - Extend planned show duration

- c. (Optional) Repeat steps a and b to add more clips to the show.

The clips are added to the show. The start time of each added clip is calculated accordingly, depending on the duration of the previously added clips.

### Tip

You can manually adjust the start time of each added clip. To set a fixed start time, proceed as follows:


- 1 - Click the **Clock** icon  in the **Start** column of the corresponding row.
- 2 - In the **Set fixed time** dialog, set **Start Date** and **Start Time**.
- 3 - Click **Confirm**.

The start time of the clip is updated accordingly and the **Auto Follow** flag is deactivated.

To deactivate the fixed start time afterward, click the **Clock** icon  again.

### Tip

To remove a clip from the show, proceed as follows:

- 1 - Select the clip to be removed.
- 2 - Click the **Remove** icon .
- 3 - In the confirmation dialog click **Remove**.

**Tip**

To change the order of the clips in the show, proceed as follows:

- 1 - Select the clip to be moved.
- 2 - Move it up or down within the clip order via drag and drop.

4. (Optional) Edit the clip flags.

**Notice**

By default, the **Auto Follow** flag is activated for all added primary events.

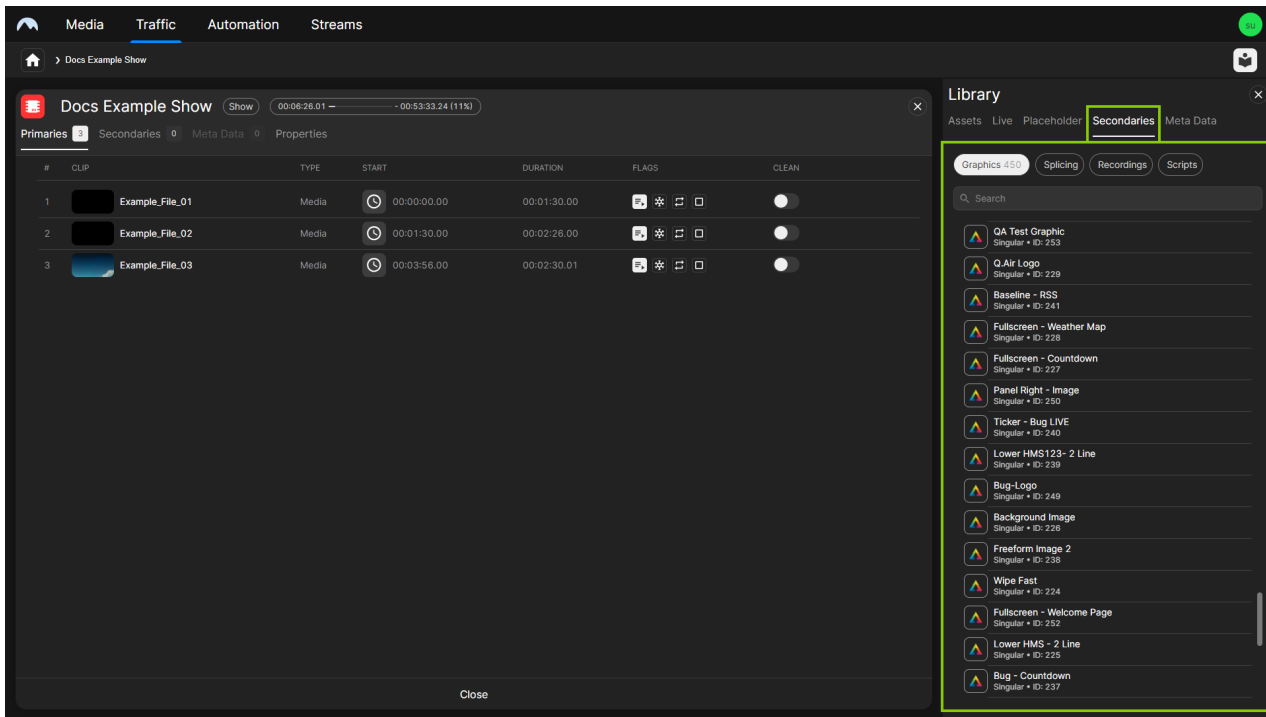
5. (Optional) Add secondary events to the show.

**Notice**

Graphics secondary events can be added to playlists, shows, and clips. If you add graphics to a show, they are displayed in addition to added playlist and clip graphics.

a. On the right side in the **Library** select the **Secondaries** tab and below the type of secondary event you want to add (for example, **Graphics, Splicing, Recordings, or Scripts**).

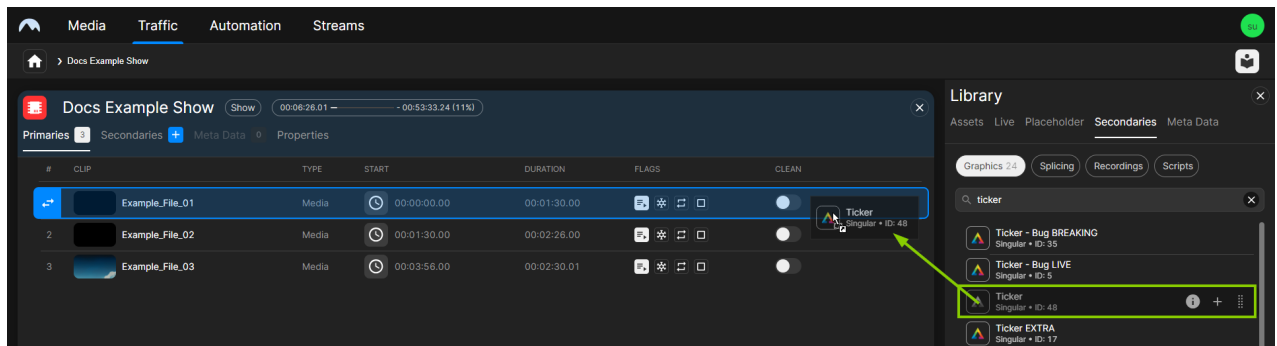
*Available secondary events of the selected type are displayed below.*



Traffic - Secondary events

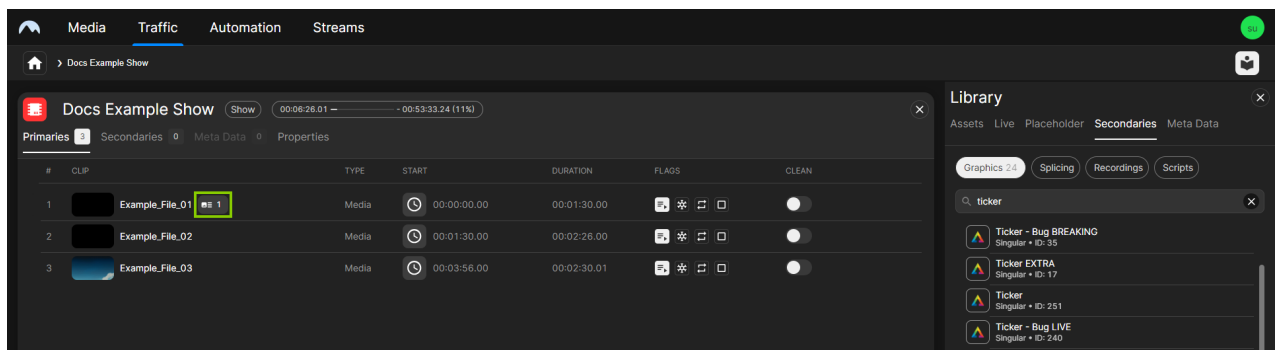
b. (Optional) To search for specific secondary events, use the search field above the list of available secondary events.

- c. To add a secondary event to a single clip in the show, select a secondary event in the library and drag it on the corresponding clip.



*Traffic - Add secondary event to a clip*

*The secondary event is added to the clip.*

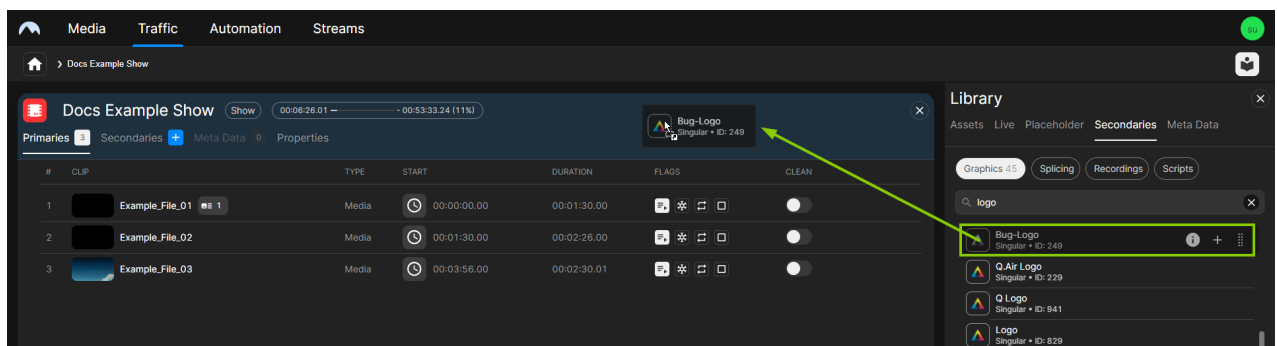


*Traffic - Secondary event added to a clip*

#### **Notice**

If you add a secondary event to a clip, a **Secondary event** icon **# 1** and the number of added events are displayed next to the clip name.

- d. To add a secondary event to the show, drag it from the library on the show information area. Alternatively, you can select the secondary event in the library and click the **Plus** icon on the right side of the corresponding row.

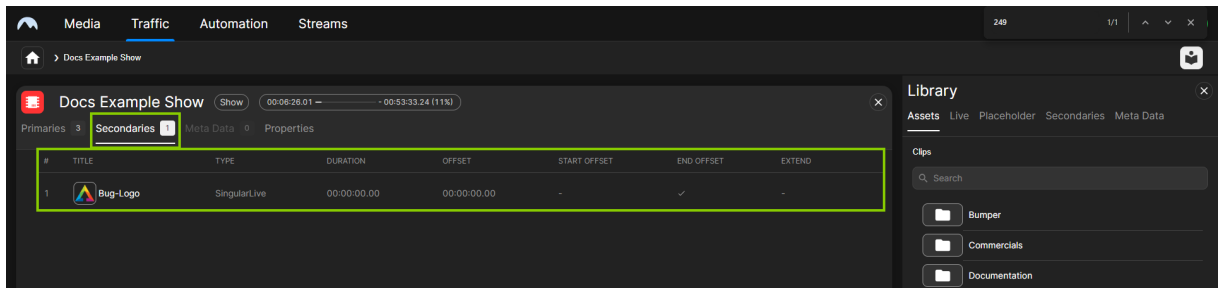


*Traffic - Add a secondary event to a show*

*The secondary event is added to the show.*

### Tip

To display a list of secondary events that are already added to the show, select the **Secondaries** tab in the show information area. The number displayed after the tab name indicates how many secondary events are currently added to the show.




*Traffic - Secondary event added to a show*

- e. (Optional) Repeat the previous two steps to add more secondary events to the show or to individual clips within the show.
- f. (Optional) [Edit the properties of an added secondary event](#), by either [Editing a clip](#) or by editing the secondary events of the show. To edit the secondary events of the show, select the corresponding tab in the show details.


### Tip

To delete a secondary event of a single clip within the show, proceed as follows:

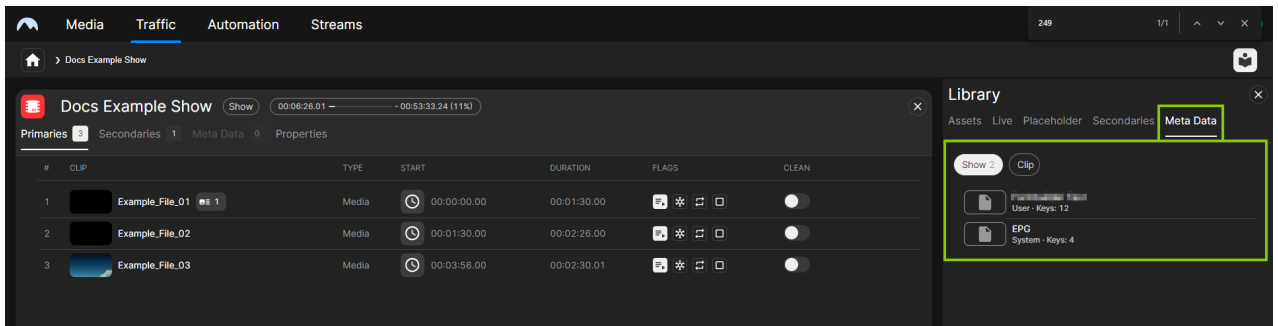
- 1 - In the clip list of the show, select the corresponding clip.
- 2 - In the clip details area on the right side, select the tab of the corresponding secondary event type (for example, **Graphics**).
- 3 - Click the **Delete** icon  on the right side of the corresponding row.
- 4 - In the confirmation dialog click **Remove**.

### Tip

To delete a secondary event of the show, proceed as follows:

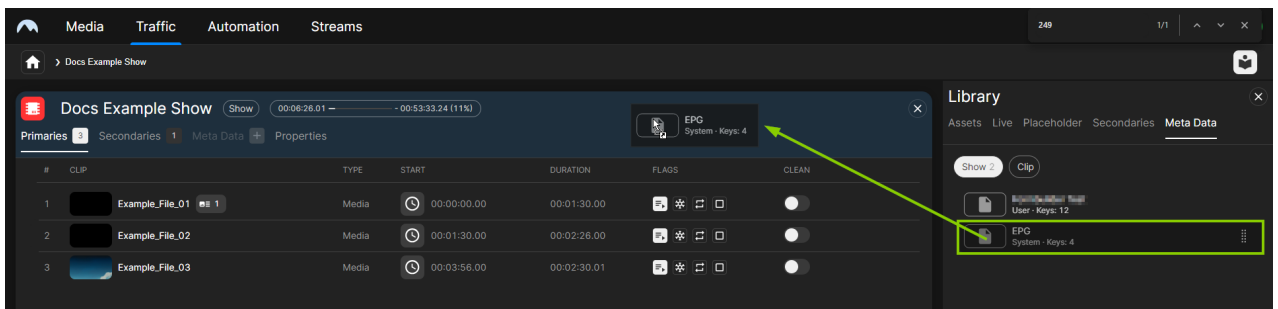
- 1 - In the show details select the tab of the corresponding secondary event type (for example, **Graphics**).
- 2 - Click the **Delete** icon  on the right side of the corresponding row.
- 3 - In the confirmation dialog click **Remove**.

6. (Optional) Add metadata to the show.
  - a. On the right side in the **Library** select the **Meta Data** tab and below the type **Show**.  
*Available metadata keysets of the selected type are displayed below.*



*Traffic - Available metadata keysets*

- b. To add a metadata keyset to the show, drag it from the library and drop it in the show information area.



*Traffic - Add a metadata keyset to a show*

The metadata keyset is added to the show.

**Tip**

To display a list of metadata keysets that are already added to the show, select the **Meta Data** tab in the show information area. The number displayed after the tab name indicates how many metadata keysets are currently added to the show.

The screenshot shows the 'Traffic' interface for 'Docs Example Show'. The 'Meta Data' tab in the show information area is active and highlighted with a green box. The table below shows the metadata keysets added to the show:

#	TITLE	TYPE	DURATION	OFFSET	START OFFSET	END OFFSET	EXTEND
1	EPG	System	00:00:00.00	00:00:00.00	[Checkmark]	[Checkmark]	[Checkmark]

The Library panel on the right has tabs for 'Assets', 'Live', 'Placeholder', 'Secondaries', and 'Meta Data'. The 'Meta Data' tab is highlighted with a green box.

*Traffic - Metadata keysets added to a show*

**Tip**

Instead of adding metadata to a show, you can also add it to a clip in the show (provided the corresponding metadata keyset is valid for clips). To do this, select the **Meta Data** tab on the right side in the **Library** and below the type **Clip**. Drag the metadata keyset from the library and drop it on the corresponding clip.

- c. (Optional) Repeat the previous two steps to add more metadata keysets to the show or its clips.



The show's properties and contents are saved. It can be added to a playlist, sent to playout, and used in a rundown.

## Editing a show

To edit a show, proceed as follows:

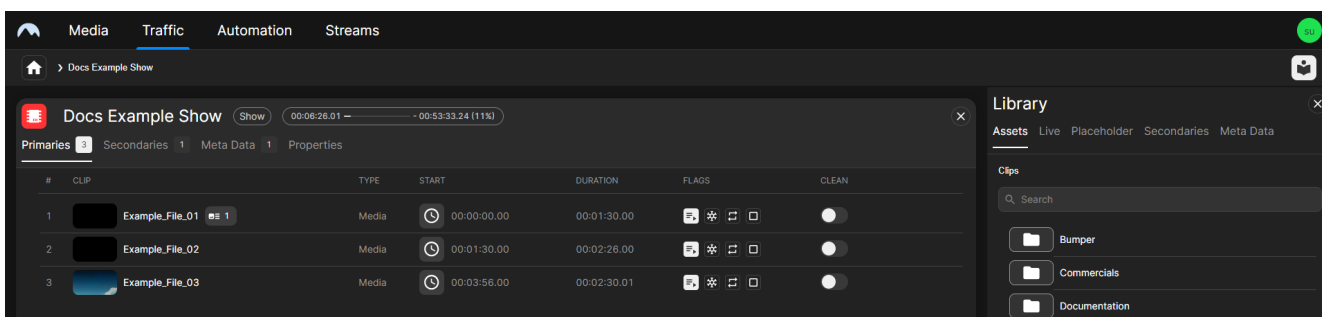
1. In the sidebar on the left, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
2. Select the show to be edited and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*
3. Edit the show, assigned secondary events, and/or metadata as described in section [Creating a show](#).

The show is saved automatically.

## Editing a clip

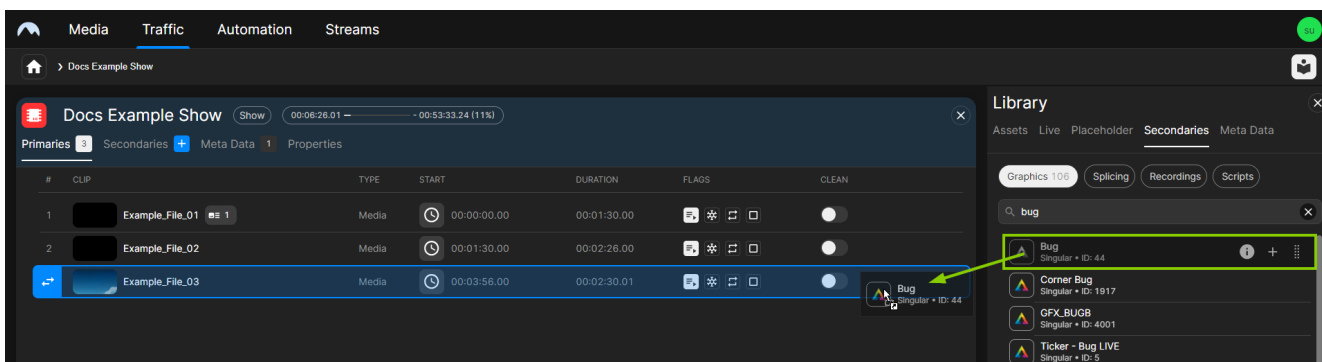
To edit a clip, proceed as follows:

1. In the left sidebar, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
2. Select the show that contains the clip to be edited and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*



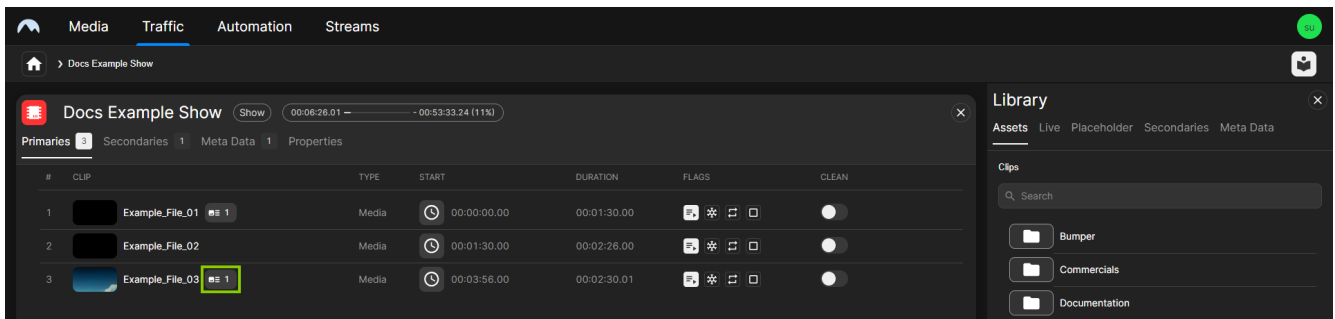
Traffic - Show details

3. (Optional) Add secondary events to the clip, by selecting a secondary event in the library and dragging it on the corresponding clip.



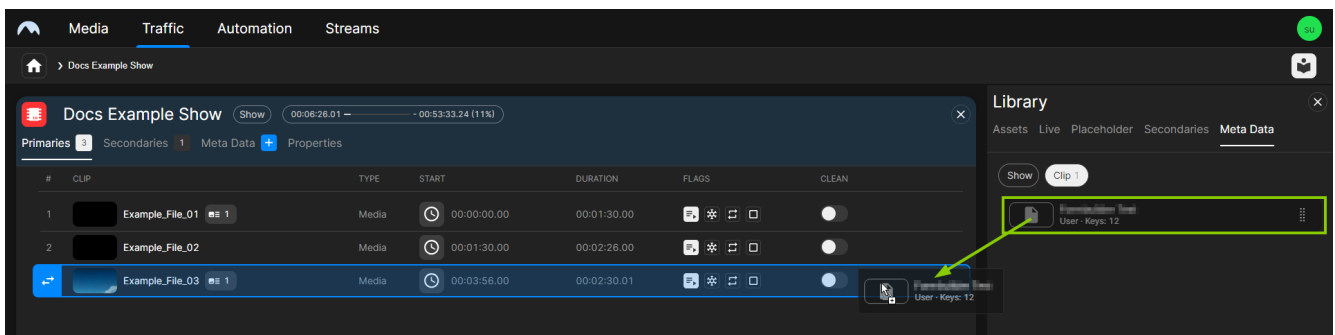
Traffic - Add secondary event to a clip

The secondary event is added to the clip. The total number of secondary events added is displayed to the right of the clip name.



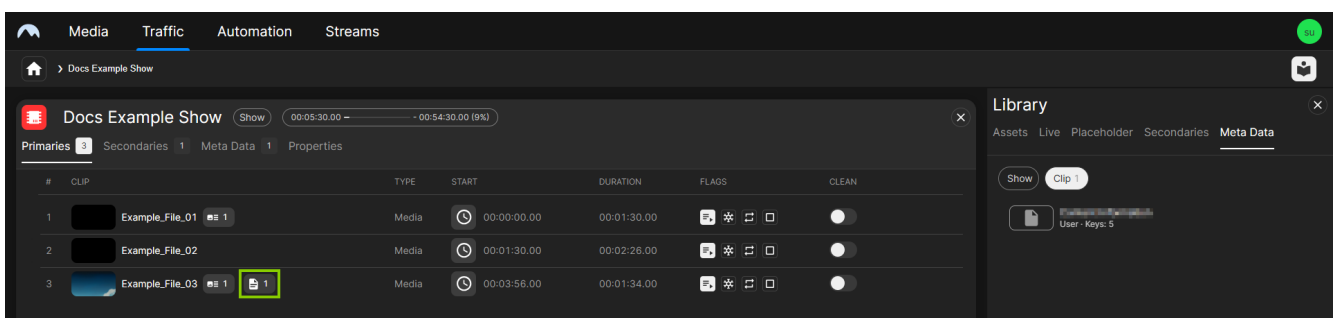
Traffic - Secondary event added to a clip

4. (Optional) Add metadata to the clip, by selecting a metadata keyset in the library under **Meta Data > Clip** and dragging it on the corresponding clip.




Traffic - Add metadata to a clip

The metadata keyset is added to the clip. The total number of metadata keysets added is displayed to the right of the clip name.





Traffic - Metadata added to a clip

5. (Optional) To edit the start time of a clip, proceed as follows:
  - a. Click the **Clock** icon  in the **Start** column of the corresponding clip.
  - b. In the **Set fixed time** dialog, edit the **Start Time**.
  - c. Click **Confirm**.

The start time of the clip is updated accordingly.

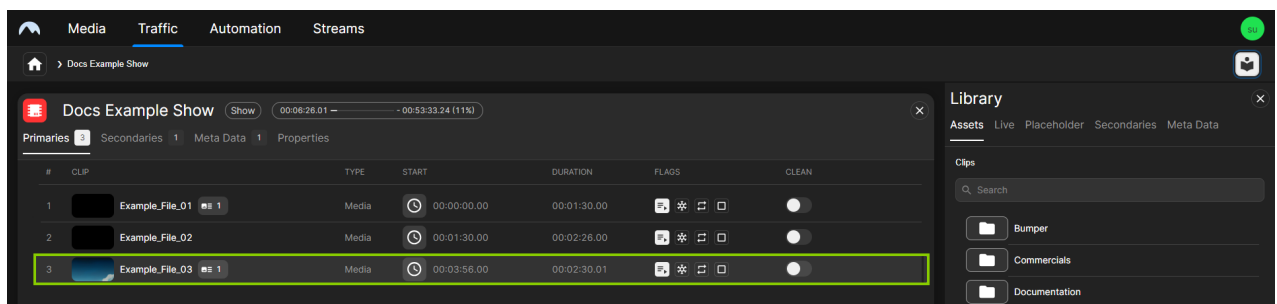
### Tip

To deactivate the fixed start time afterward, click the **Lock** icon  again. As a result, the clip start time is set automatically so that it starts right after the previous clip ends. If there is a gap between the clip and the previous clip, it is automatically closed.

6. (Optional) To edit the planned duration of a live clip, proceed as follows:
  - a. Hover your mouse over the corresponding clip, click the **Options** icon , and select **Edit**.
  - b. Edit the **Live duration** value.
  - c. Confirm the new duration, by clicking **OK**.

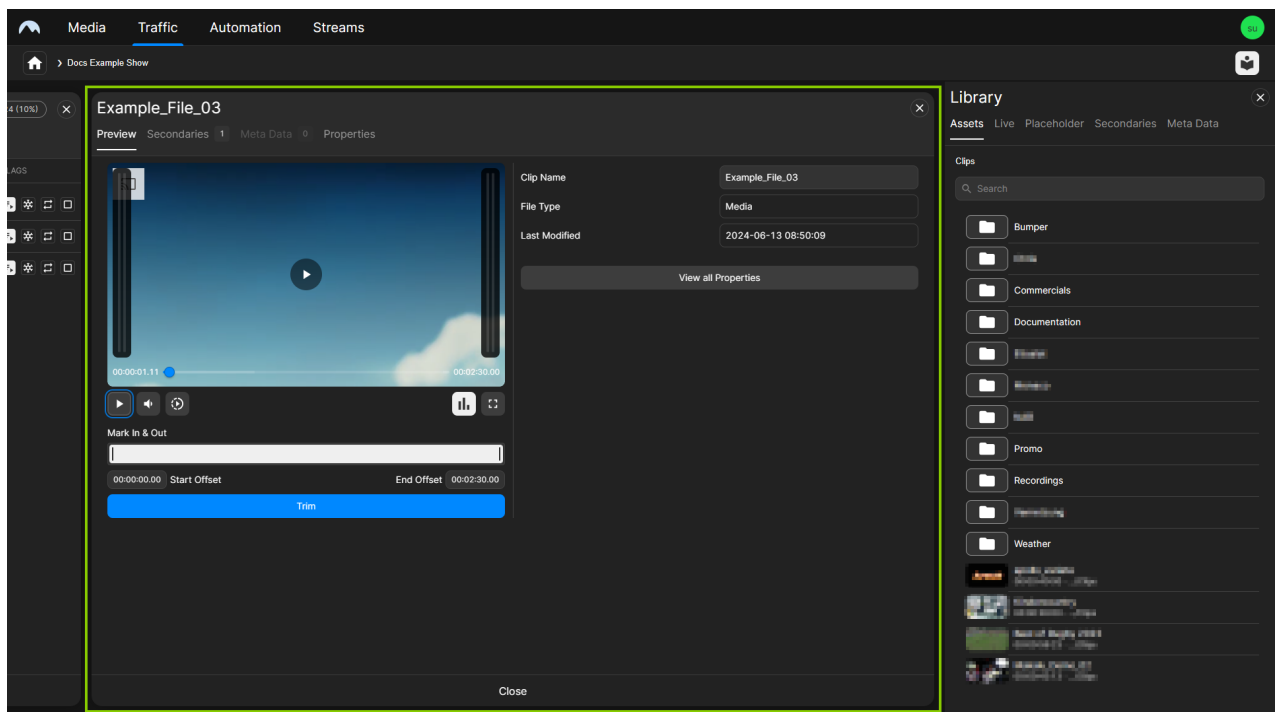
*The duration of the live clip is updated accordingly.*

7. To edit the clip properties, proceed as follows:
  - a. In the clip list select the clip to be edited and click **Open** on the right side of the corresponding row.



*Traffic - Select clip*

*The clip details and preview are opened on the right side.*



*Traffic - Clip details*

- b. Edit the clip properties.

### Tip

You can edit the clip name in the **Preview** tab. Alternatively, you can edit additional properties (e.g. clip description) that are available in the **Properties** tab.

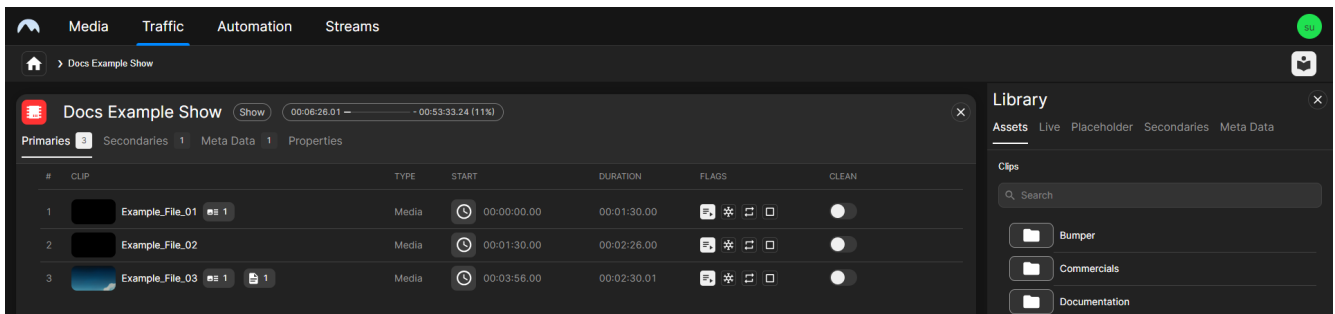
8. (Optional) [Trim the clip](#).  
 9. To save your changes, click **Apply Changes** at the bottom of the clip details area.

The clip properties are saved.

### Trimming a clip

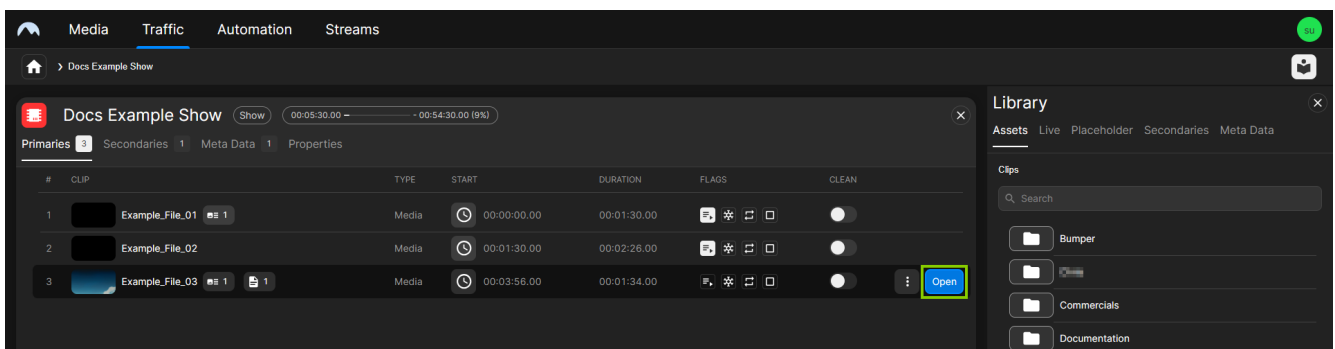
To trim a clip, proceed as follows:

- In the left sidebar, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
- Select the show that contains the clip to be edited and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*



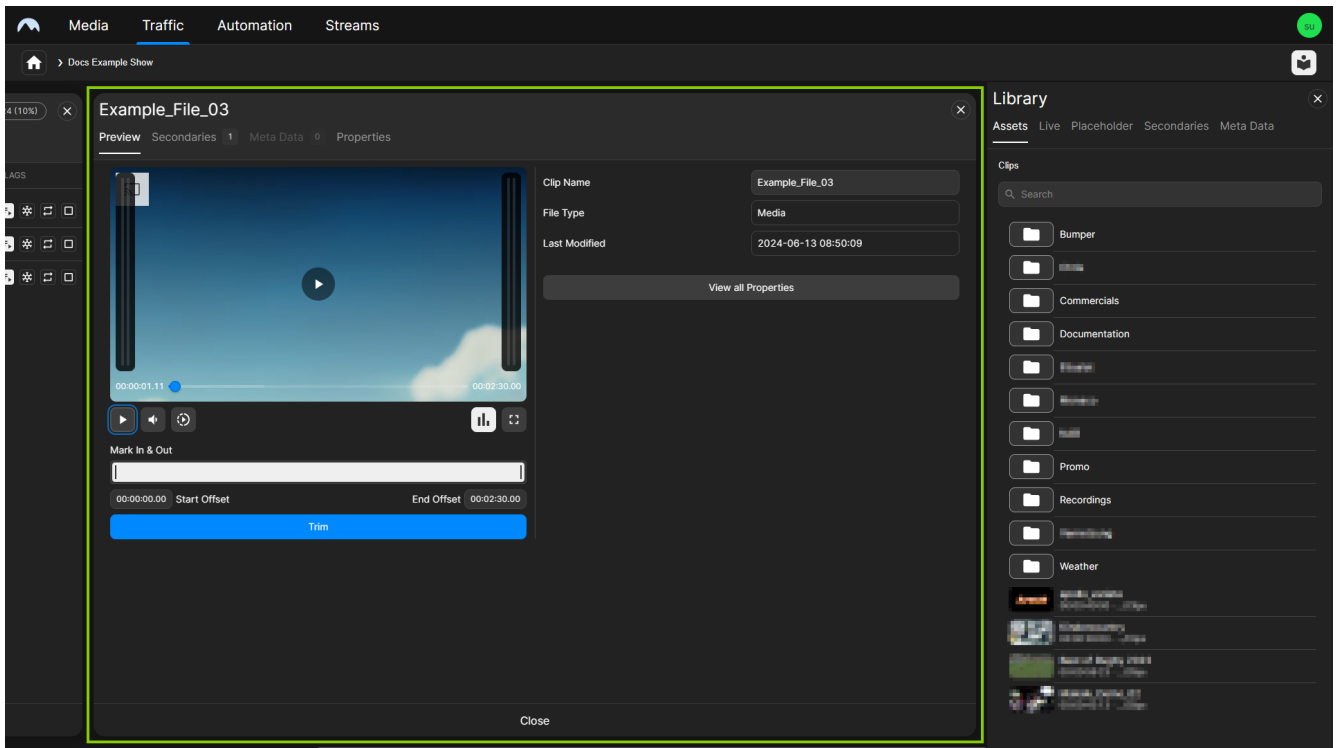
Traffic - Show details

- In the clip list hover your mouse over the clip to be trimmed and click **Open** on the right side of the corresponding row.



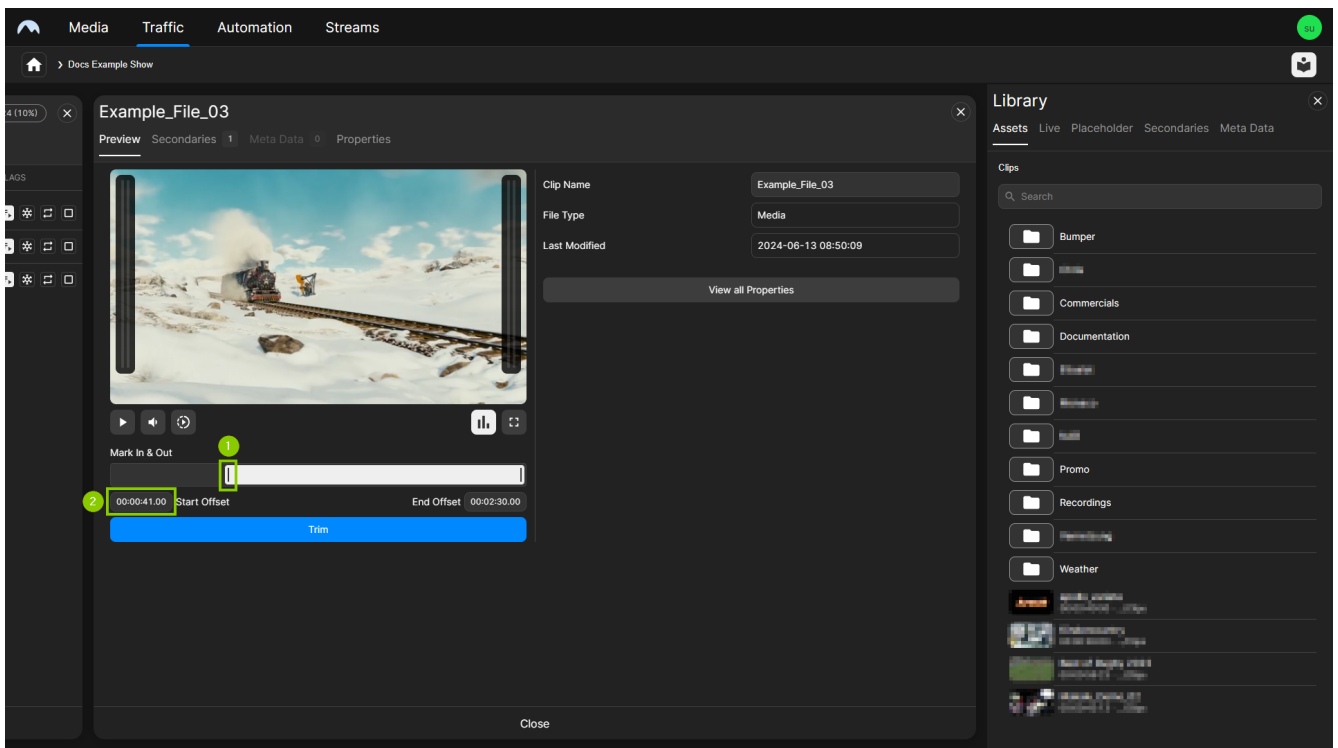
Traffic - Select clip

The clip details and preview are opened on the right side.



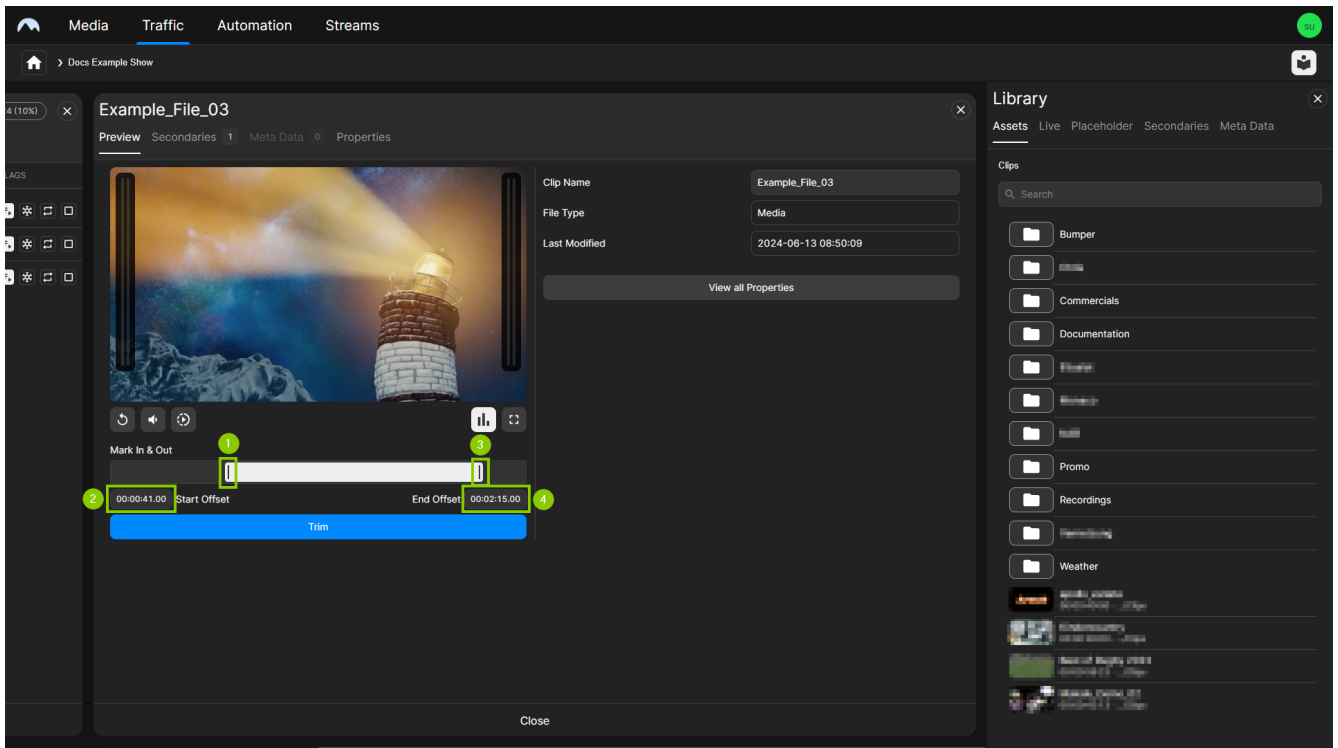
Traffic - Clip details

- Set the mark in point, by either dragging the left handle of the trim bar (1) to the corresponding time or by entering the timecode to be used in the **Start Offset** field (2).



Traffic - Trim clip - Set mark in

- Set the mark out point, by either dragging the right handle of the trim bar (3) to the corresponding time or by entering the timecode to be used in the **End Offset** field (4).




Traffic - Trim clip - Set mark out

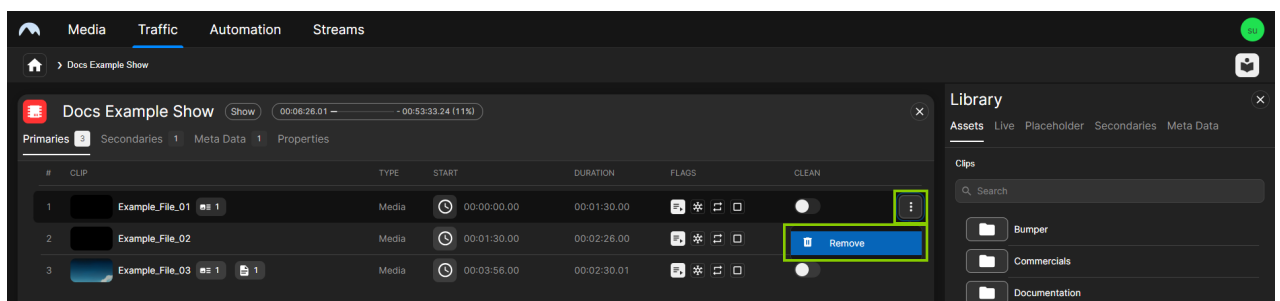
- To confirm your changes, click **Apply Changes**.

The clip is trimmed. The duration displayed in the clip list is updated accordingly. When the clip is played, only the trimmed section will be used.

### Deleting a clip


To delete a clip from a show, proceed as follows:

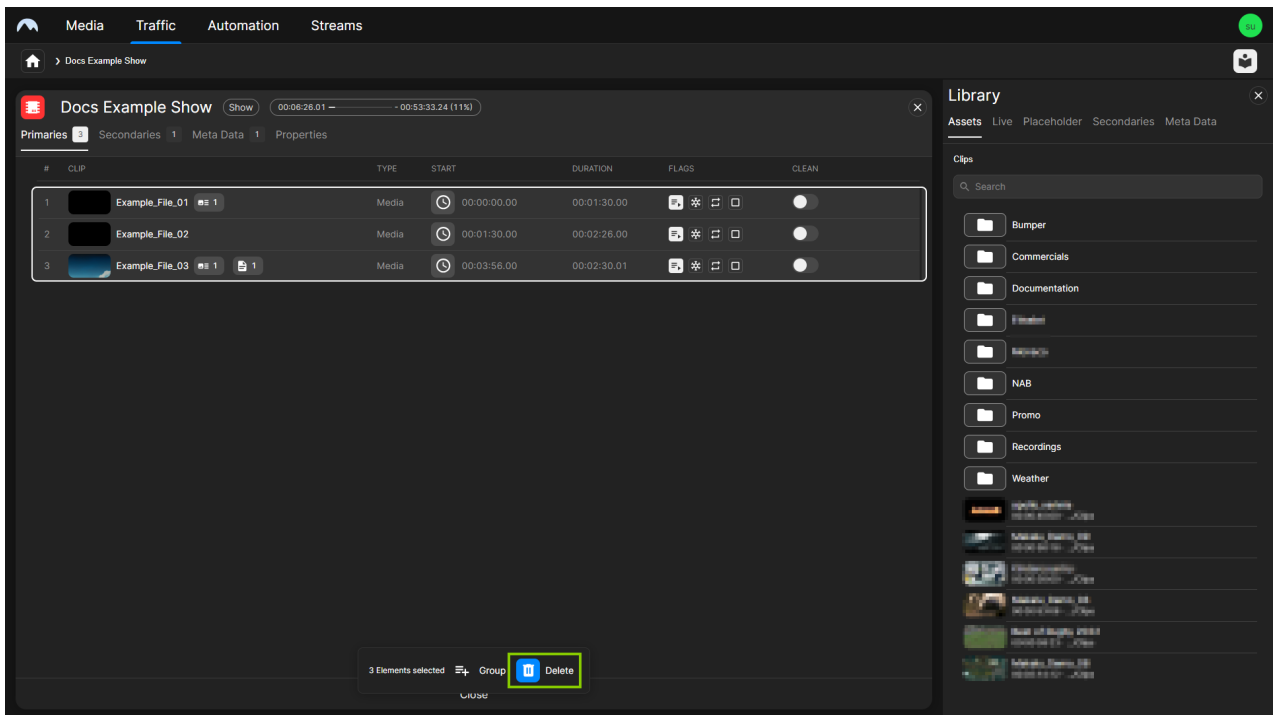
- In the sidebar on the left, select **Shows**.  
All available shows of the currently selected channel are listed in the middle.
- Select the show to be edited and click **Open** on the right side of the corresponding row.  
The show details are displayed.
- To delete one or more clips from the show, proceed as follows:
  - To delete a single clip, hover your mouse over the clip. On the right side of the corresponding row click the **Options** icon  and select **Remove**.



Traffic - Delete a single clip

Confirm the following dialog, by clicking **Delete**.

- b. To delete multiple clips, hold either **[Ctrl]** or **[Shift]** and select the corresponding clips. Then click the **Delete** icon  at the bottom of the screen.



Traffic - Delete multiple clips

Confirm the following dialog, by clicking **Delete**.

*The selected clips are deleted from the show.*

### Creating a placeholder

When you create a program schedule you can reuse a placeholder in shows (including reruns). You can later replace it with the corresponding physical file in the Automation UI or Traffic UI when it becomes available.

To create a placeholder, proceed as follows:

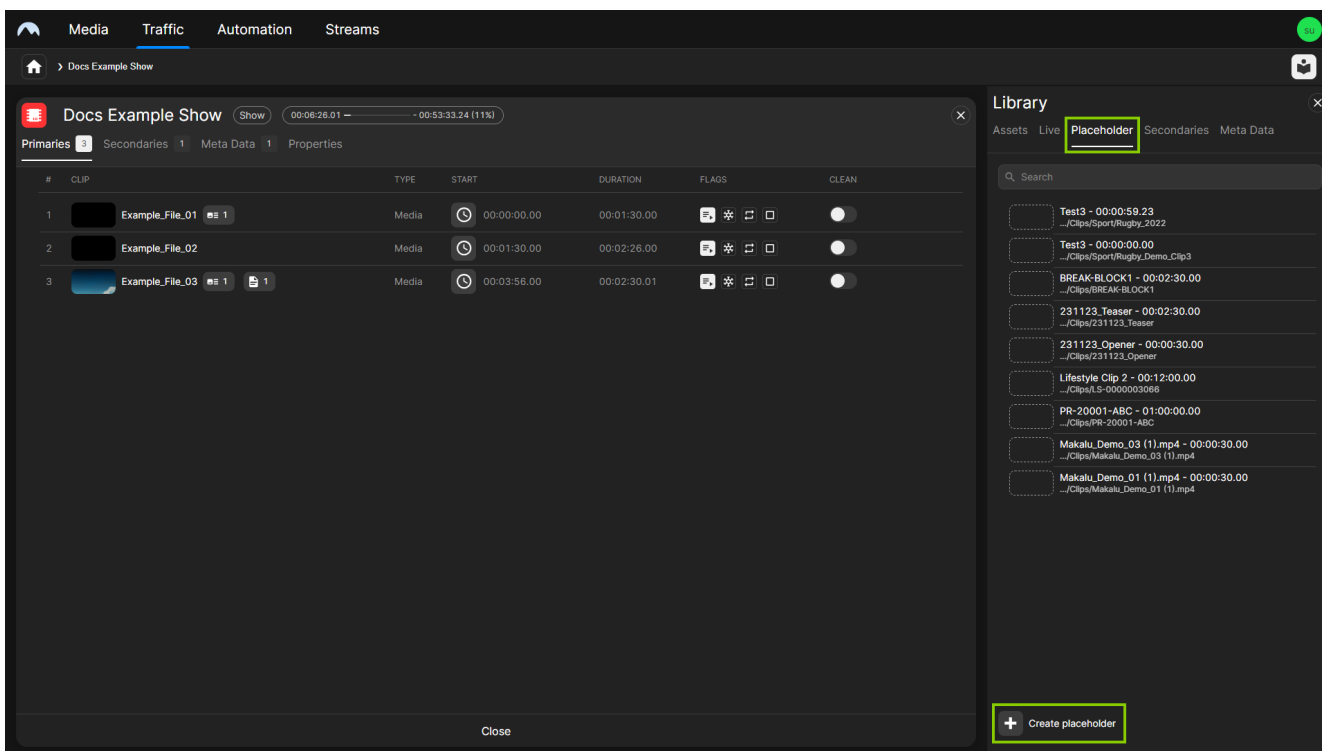
1. In the left sidebar, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
2. Select a show and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*
3. In the library on the right side select the **Placeholder** tab.

#### Tip

If the library is not displayed, click the **Library** icon  at the top right to enable it.

*All available placeholders are listed.*

- At the bottom left of the library click **Create placeholder**.



Traffic - Create placeholder

The **Create Placeholder** menu opens.

The 'Create Placeholder' dialog box is shown with the following fields and values:

- Name\***: Example placeholder
- Media ID\***: MAKALU001
- Duration\***: 01:00:00.00
- Storage Location\***: [Redacted] /Clips/

\* Required fields

**Create**

Traffic - Create placeholder menu


- Edit the placeholder properties as required, by entering its **Name**, **Media ID**, **Duration**, and **Storage Location**.
- To confirm the creation, click **Create**.

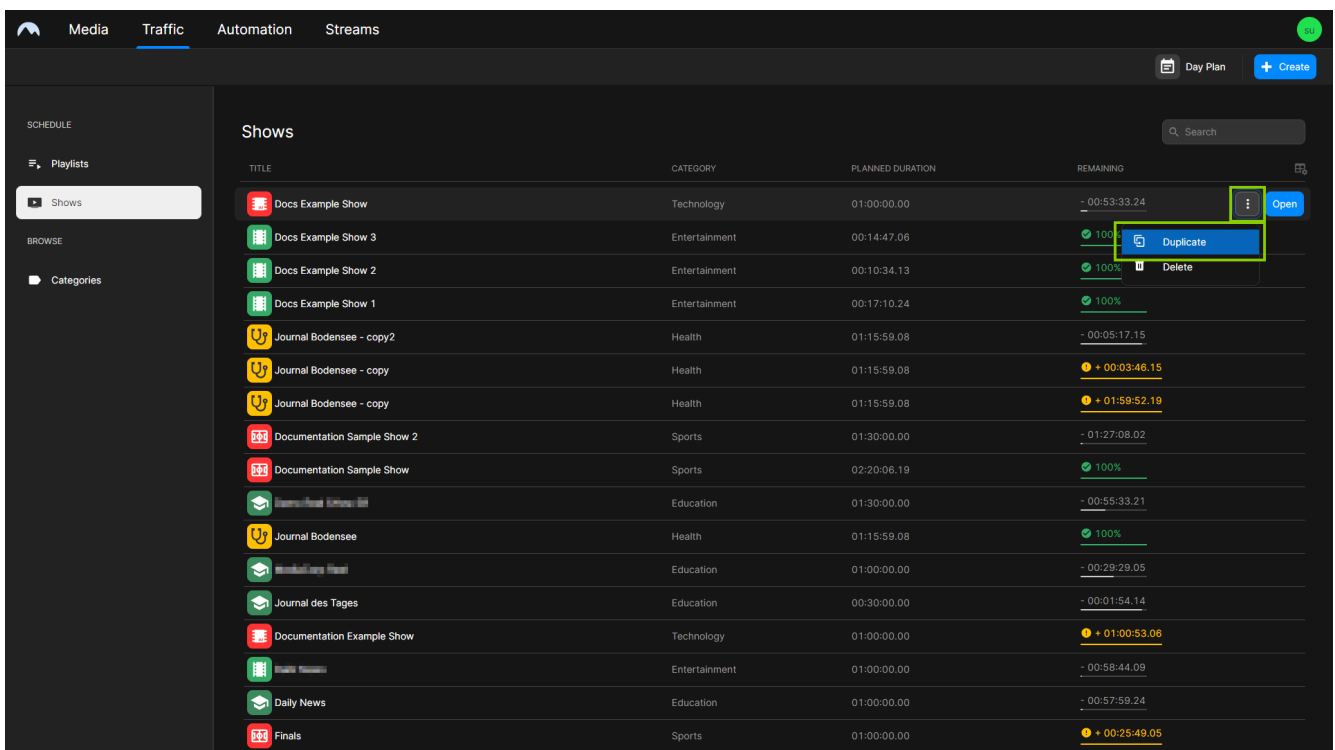


The placeholder is created with the selected properties and added to the list of available placeholders in the library. It can be added to a show.

## Duplicating a show

To duplicate a show, proceed as follows:

1. In the left sidebar select **Shows**.  
*All available shows are listed.*
2. Hover your mouse over the show to be duplicated. On the right side of the corresponding row click the **Options** icon  and select **Duplicate**.



Traffic - Duplicate show


The **Duplicate Show** menu opens.

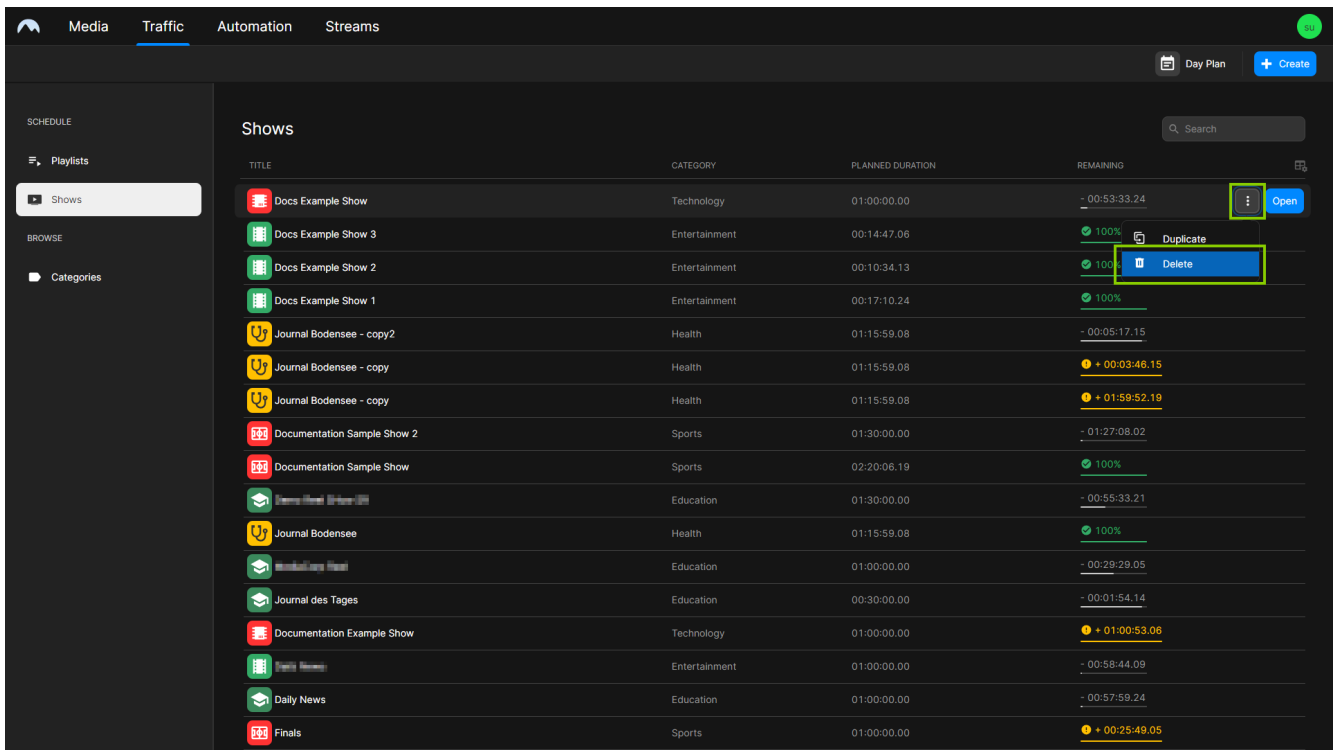
3. Enter the name of the duplicated show.
4. Click **Confirm**.  
*A copy of the show (including all properties, primary, and secondary events) is created.*
5. Edit the [show properties](#), primary and/or secondary events as required as described in section [Editing a show](#).

## Deleting a show

To delete a single show, proceed as follows:

1. In the left sidebar select **Shows**.  
*All available shows are listed.*

2. Hover your mouse over the show to be deleted. On the right side of the corresponding row click the **Options** icon  and select **Delete**.




#### Traffic - Delete show

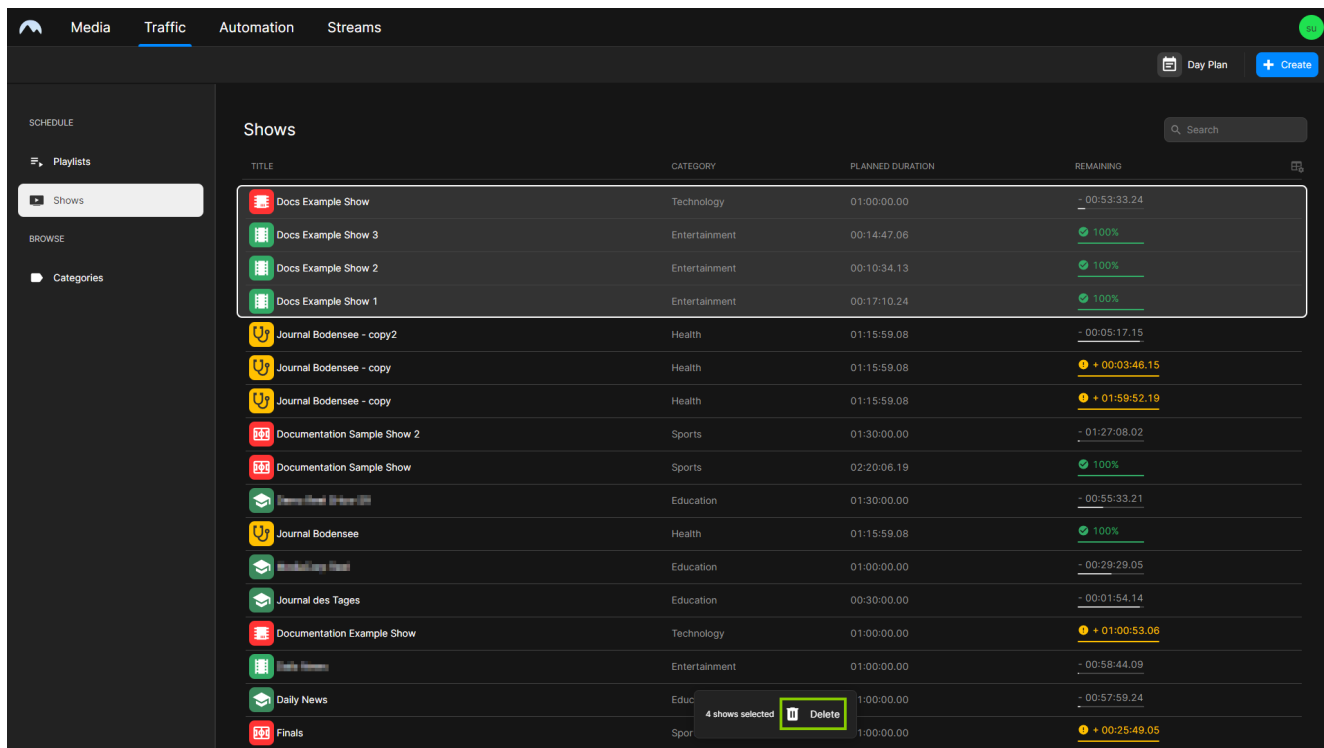
A confirmation dialog is displayed.

3. To delete the show, click **Confirm**.

The show is deleted.

To delete multiple shows, proceed as follows:

1. In the left sidebar, select **Shows**.  
All available shows are listed on the right side.
2. Hold either **[Ctrl]** or **[Shift]** and select the corresponding shows.
3. Click the **Delete** icon  at the bottom of the screen.



### Traffic - Delete multiple shows

A confirmation dialog is displayed.

- To delete the selected shows, click **Confirm**.

The selected shows are deleted.

### Show properties

The following table provides an overview of all available show properties:

#### Notice

Time-related properties use a frame-accurate notation in the format `hh:mm:ss.ff`. The frame rate time base is part of the global system configuration. Makalu supports the frame rates 25, 29.97, 30, 50 and 60 fps.

Property	Description
Category	Content category
Show Title	Name of the show
Planned Duration	Planned duration of the show
Description	Text description for the show

## Clip flags

Each clip within a show has a set of flags, which define how it should be played by the automation, especially how the start and end of each clip should be handled.





The following table provides an overview of all available clip flags:




### Notice

Some of the listed clip flags are only available in Makalu Traffic and others only in the rundown in the Makalu Automation detailed channel view (see [Channel rundown](#)).

### Notice

Deactivated flags are displayed in gray, activated flags are highlighted in white.

Flag icon	Flag name	Description
	Auto Follow	When the playback of the previous clip is finished, the playback of the current clip starts automatically.  <b>Notice:</b> <i>By default, the Auto Follow flag is initially activated for every clip.</i>
	Open End	The clip is played permanently until the operator manually triggers the start of the next clip.  <b>Notice:</b> <i>This flag is only available for clips of type <b>live source</b>.</i>
	Freeze Last	When the playback of the clip is finished, the last frame stays displayed.
	Freeze Black	When the playback of the clip is finished, a black image stays displayed.  <b>Notice:</b> <i>The image to be displayed is configurable.</i>

Flag icon	Flag name	Description
	Loop	<p>The clip is played in a loop until the operator manually triggers the start of the next clip.</p> <p><b>Tip:</b> <i>If the loop flag is activated for the last clip in a group, the whole group is played in a loop.</i></p>
	Auto Cue (Cue Next)	<p>The next clip is automatically prepared for playback, but the first frame stays displayed until the operator manually triggers the start of the next clip.</p>
	Clean	<p>The clip is played without graphics add-ons, even if graphics are assigned to it.</p> <p><b>Notice:</b> <i>This also applies to cases where graphics add-ons of the previous clip would normally extend beyond the regular end of the previous clip. Depending on how the duration of the graphics add-on is set, graphics of the previous clip can stay displayed even after the next clip starts. But if the clean flag is activated for the next clip, graphics are not displayed.</i></p>

## 2.3.4 Secondary events

When a secondary event is added/attached to a clip, show, or playlist, it is considered an “add-on”. Each add-on has common time-related properties and optional content-related properties, that apply and can be edited within the context of the corresponding clip, show, or playlist.

### Notice

Time-related properties use a frame-accurate notation in the format `hh:mm:ss.ff`. The frame rate time base is part of the global system configuration. Makalu supports the frame rates 25, 29.97, 30, 50 and 60 fps.

For information about how to add secondary events, see section [Creating a playlist](#) or [Creating a show](#), for example.

### Common properties

The following common and time-related properties are used by graphics and metadata secondary events:

Property	Description
Add-on name	Name of the add-on
Start offset	Offset until the add-on is displayed/enabled (based on the start of the clip, show, or playlist)
Bind start offset to end	If activated, the start offset will be calculated based on the end of the clip, show, or playlist
Bind end offset to end	If activated, the end offset will be calculated based on the end of the clip, show, or playlist
End offset	Offset until the add-on is removed/disabled (based on the end of the clip, show, or playlist - only available if <b>Bind end offset to end</b> is enabled)
Duration	Duration until the add-on is removed/disabled (only available if <b>Bind end offset to end</b> is disabled)
Extend	If activated, the display/enabled duration of the add-on can be extended beyond the regular end of the clip, show, or playlist it is assigned to

### Examples of using time-related properties

The following table provides examples of how time-related add-on properties are usually used:

Example	Start offset	Duration / end offset	Bind start offset to end	Bind end offset to end
Display a graphics add-on for the entire duration of a clip, show, or playlist	00:00:00:00	00:00:00:00	Deactivated	Activated
Display a graphics add-on 5 seconds after the clip, show, or playlist starts and remove it 10 seconds later	00:00:05:00	00:00:10:00	Deactivated	Deactivated
Display a graphics add-on 20 seconds before the clip, show, or playlist ends and remove it 5 seconds before the clip, show, or playlist ends	00:00:20:00	00:00:05:00	Activated	Activated
<p>Display a graphics add-on 2 seconds before the clip, show, or playlist ends and remove it 4 seconds later</p> <p>In this case, the add-on would overlap two clips, shows or playlists. This is useful, for example, for displaying transition effects (wipe, fade, etc.).</p>	00:00:02:00	00:00:04:00	Activated	Deactivated

## Graphics properties

The following table provides an overview of available graphics secondary event properties:

Property	Description
Add-on sub-type	Graphics sub-type (for example, Singular)
Use payload	<p>If activated, a custom payload text can be entered. If deactivated, the default payload configured in Singular.Live is used instead.</p> <p>Input fields for custom payload text are only available for graphics that include dynamic text.</p>
Graphics type-specific properties	Depending on the graphics type different properties are displayed (for example, scale and position for images or input fields for the dynamic text payloads)

## Splicing properties

### Notice

Splicing events are part of the Dynamic ad triggering (SCTE 35) feature that is available as an optional Makalu add-on. For more information, see section [Ad triggering](#).

The following table provides an overview of available splicing secondary event properties:

Property	Description
Media title	Splicing event title
Type	Splicing event type
Splice event id	Splicing event id (allows a downstream system to decide how the original content should be replaced or blanked)
UPID type	<p>Splicing event type UPID (allows a downstream system to decide how the original content should be replaced or blanked)</p> <p>Only available for splicing secondary events of type <b>Timed</b></p>
UPID	Splicing event UPID (allows a downstream system to decide how the original content should be replaced or blanked)



Property	Description
Use automatic	<p>If activated, the end splicing event trigger is sent automatically when the event duration is completed</p> <p>If deactivated, the end splicing event trigger must be sent manually by the operator</p>
Duration	Splicing event duration (set to the clip length by default)
Send duration	If activated, the splicing event duration is also included in the splicing event trigger
Event offset	Offset for the start time of the splicing event (if set to 00:00:00:00 the splicing event trigger is sent starting with the first I-Frame of the corresponding clip or show the event is assigned to)
Web delivery allowed	<p>If activated, the <b>Web delivery allowed</b> flag is set accordingly in the splicing event trigger, signaling a downstream system that web delivery is allowed for the corresponding content</p> <p>Only available for splicing secondary events of type <b>Timed</b></p>
Regional blackout	<p>If activated, the <b>Regional blackout</b> flag is set accordingly in the splicing event trigger, signaling a downstream system that regional blackout is enabled for the corresponding content</p> <p>Only available for splicing secondary events of type <b>Timed</b></p>
Archive allowed	<p>If activated, the splicing event trigger includes information that signals a downstream system that archiving is allowed for the corresponding content</p> <p>Only available for splicing secondary events of type <b>Timed</b></p>
Device restrictions	<p>Information about restrictions that apply to certain device groups</p> <p>Only available for splicing secondary events of type <b>Timed</b></p>

Property	Description
Avail expected	<p>Total number of avails to be expected</p> <p>Range: 0-255 (use 0 to disable this feature)</p> <p>Only available for splicing secondary events of type <b>Avail</b></p>
Avail num	<p>Current avail number</p> <p>Range: 0-255 (use 0 to disable feature, must not be greater than <b>Avail expected</b> number)</p> <p>Only available for splicing secondary events of type <b>Avail</b></p>
Auto return	<p>Defines if downstream systems should automatically switch back to the original program content at the end of an avail</p> <p>If activated, downstream systems get the information to automatically switch back to the original program content when the avail duration ends (requires that <b>Send duration</b> is also activated)</p> <p>If deactivated, downstream systems get the information to not automatically switch back to the original program content. Instead, they must wait until they receive the corresponding message, that is automatically sent by the splicer and triggers downstream systems to switch back to the original program content.</p> <p>Only available for splicing secondary events of type <b>Avail</b></p>

### Stream target properties

The following table provides an overview of available stream target secondary event properties:

Type	Property	Description
YouTube	Title	Stream event title
YouTube	Description	Stream event content description
YouTube	Automatic	Time-related switch

Type	Property	Description
YouTube	Start time	Start date and time of the streaming event
Generic	Source stream	Source to be streamed
Generic	Target type	Target type of the stream (for example, YouTube, Facebook, LinkedIn, Twitch, RTMP, RTMPS)
Generic	Title	Stream event title
Generic	Description	Stream event content description
Generic	Stream URL	Target URL
Generic	Stream key	Stream key (used for authentication)
Generic	Username	Username (if required for authentication)
Generic	Password	Password (if required for authentication)
Generic	Start time	Start date and time of the streaming event

### Recording properties

The following table provides an overview of available recording secondary event properties:

Property	Description
Name	Event title (read-only)
Rec Type	Type of recording, e.g. "Broadcast" or "Standard" (for more information, see section <a href="#">Recording &gt; Encoder types</a> ) (read-only)
Start Offset	Offset until the recording starts (based on the start of the clip), default: 00:00:00:00
Bind start offset to end	If activated, the start offset will be calculated based on the end of the clip, default: disabled
Bind end offset to end	If activated, the end offset will be calculated based on the end of the clip, default: enabled
End Offset	Offset until the recording stops (based on the end of the clip - only available if <b>Bind end offset to end</b> is enabled), default: 00:00:00:00

Property	Description
Filename	<p>Name of the file to be recorded</p> <p>Supports the following placeholders for dynamic replacements:</p> <ul style="list-style-type: none"> <li>• {yyyy} - Current date (year)</li> <li>• {mm} - Current date (month)</li> <li>• {dd} - Current date (day)</li> <li>• {HH} - Current time (hour)</li> <li>• {mm} - Current time (minute)</li> <li>• {TITLE} - Event title</li> </ul>
Folder	Target folder for storing the recorded file
Source	<p>Source stream/signal to be recorded</p> <p><i><b>Tip:</b> Each playout channel has a configurable default live source, which is pre-selected by default in the <b>Source</b> field. It is used by default when a recording secondary event is attached to a live clip in the rundown. You can change this default source in the <b>Recording</b> tab.</i></p>
Profile	File format/profile to be used for the recording

Property	Description
Type	<p>Reusability of the recording job</p> <p>Available options:</p> <ul style="list-style-type: none"> <li>• Single Shot - Recording job can only be used once</li> <li>• Multi Shot - Recording job can be reused (incl. all properties)</li> </ul> <p><b>Notice:</b> An example use case for a multi shot recording job would be a playlist with a live event, that is repeated every hour. A Multi Shot recording secondary event is attached to the live event. It can be used as often as required and the initially selected properties are used repeatedly to record each live event.</p> <p>If the <b>Filename</b> field contains placeholders for dynamic elements (e.g. <code>{YYYY}-{MM}-{dd}-{HH}-{mm}-{TITLE}</code>), these placeholders are automatically replaced with the corresponding values to differentiate the recorded files based on these dynamic elements of the file name. If no parameters are included, a consecutive number is appended to the file name, e.g. <code>_1, _2, _3</code>, etc.</p>

### Audio mapping properties

The following table provides an overview of available audio mapping secondary event properties:

Property	Description
Inputs	List/number of audio channels on the input side (for example, 1-8)
Outputs	Audio tracks and channels on the output side, divided by track/purpose (for example, "Full mix", "Original version", "Audio description", etc.) and type (for example, "L" and "R" for the left and right channel of a stereo audio track)

For information, see section [Audio mapping](#).

## 2.3.5 Metadata

### Basic information

Makalu enables you to add descriptive metadata to playlists, shows, and clips. It can be used for various purposes, e.g. to transmit content-related program information to downstream systems and/or service providers (e.g. via Electronic Program Guide, EPG).

Within the context of Makalu, metadata is referred to as "keyset". Each keyset consists of one or more individual metadata elements/properties. Makalu also distinguishes between system- and user-specific keysets. System keysets are always available by default (e.g. EPG) and cannot be removed. User-specific keysets can be created and configured individually by the user.

You can add a metadata keyset from the library to a playlist, show, or clip using drag and drop. For information about how to add metadata, see section [Creating a playlist](#) or [Creating a show](#), for example.

### Metadata properties

The following table provides an overview of available system metadata keysets and their properties:

Keyset	Property	Description
EPG	Short event descriptor	Short description of the content
	Extended event descriptor	Detailed description of the content
	Name	EPG name
	FSK	Parental rating (based on the German motion picture rating system organization FSK, for example, 0, 6, 12, 16, 18)
	DVB content	Content category (for example, news, magazine, comedy, etc.)
	Char code	Character encoding of the EPG information (default: Western European - ISO/IEC 8859)
	Language	Language of the EPG information (for example, German or English)

## 2.4 Automation

### 2.4.1 Automation

#### **Overview**

The Makalu Automation component provides two separate UIs/views, a multichannel view, and a detailed channel view.

The multichannel view (see section [Multichannel view](#)) is only available in multichannel environments. It provides an overview of all available channels, incl. preview and rundown information.

The detailed channel view (see section [Automation](#)) is available in all environments. It provides full control over the rundown and playout of the corresponding channel.

## 2.4.2 Multichannel view

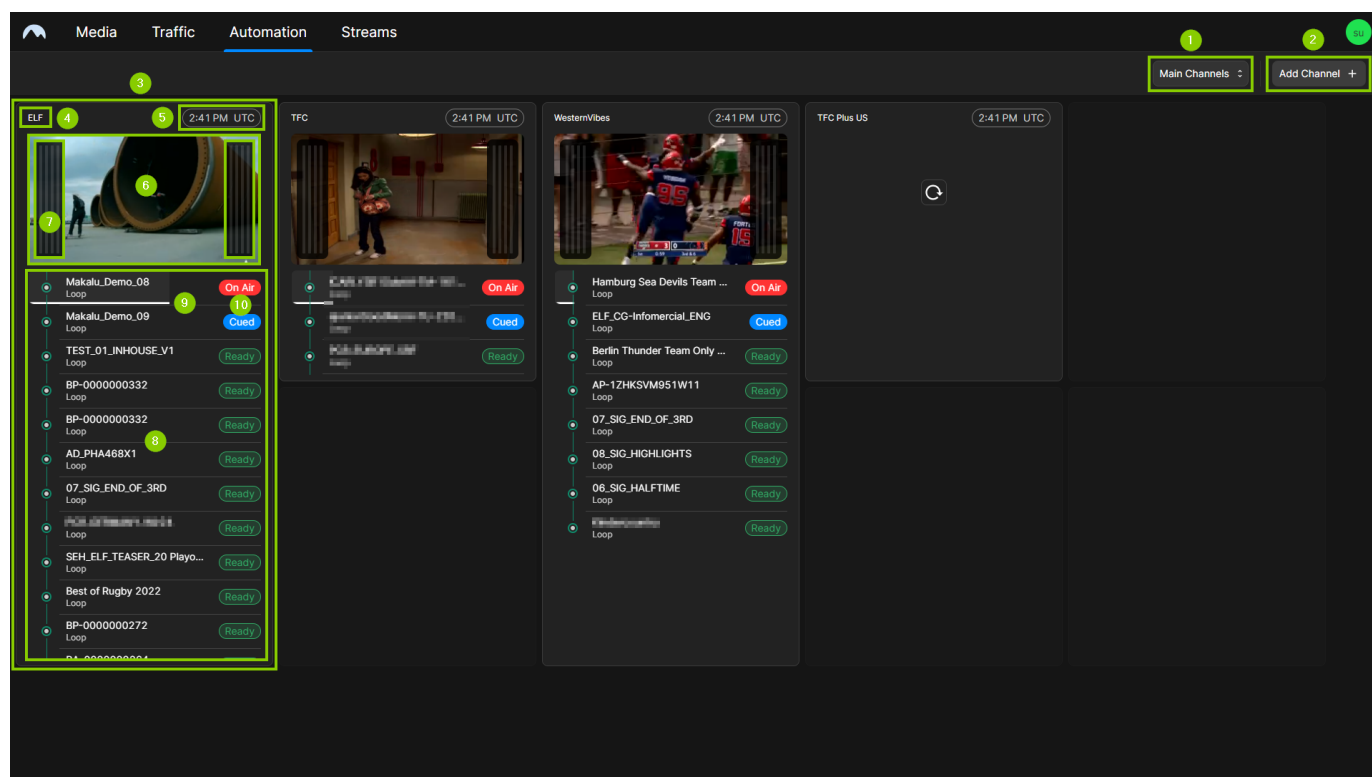
### Overview

When Makalu is operated as a multichannel environment, the multichannel view is available in the Automation tab of the Makalu UI. It is a configurable view for monitoring purposes and is particularly suited for operators of multichannel environments, who can use it to monitor multiple playout channels simultaneously. It is not to be confused with a multiviewer as it not only displays a preview of what is currently being played out but also the current rundown of each channel. Additionally, it provides access to the detailed view of each channel (see section [Detailed channel view](#)).

It displays channels as tiles and each tile can be displayed either expanded or collapsed. When all channels are displayed collapsed, up to ten channels can be displayed simultaneously on a monitor with a resolution of 1920 x 1080 px.

If an error or problem is detected on a channel, the corresponding channel tile is highlighted with a different background color. Depending on the problem's severity, it is highlighted, for example, in yellow, orange, or red.

The multichannel view consists of the following elements:



Automation - Multichannel view

1. Main/backup selection
2. Add channel menu
3. Channel tile
4. Channel name
5. Local UTC time of the user
6. Preview (can be paused and resumed)
7. Audio level peak meter (supports up to eight audio tracks)



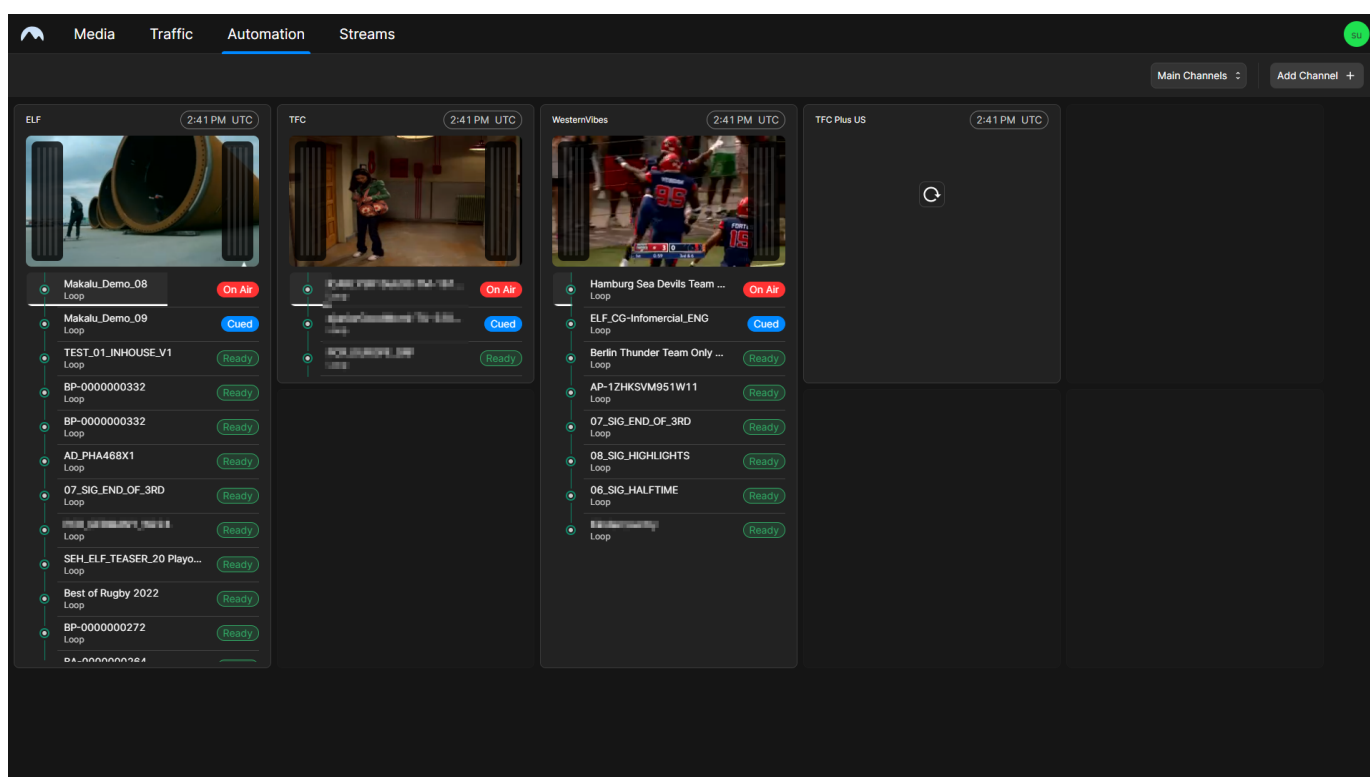
8. Rundown (starting with the currently playing on-air clip and followed by the next clips scheduled in the rundown)
9. Playback progress of the currently playing on-air clip
10. Clip status (see section [Channel rundown](#))

### Accessing the multichannel view

To access the **Makalu Automation multichannel view**, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. Select the **Applications** tab.
3. In the app list in the left column, select **Automation > Multichannel View**.

The main Makalu UI is opened in a new browser tab and the Automation tab with the multichannel view is displayed.



Automation - Multichannel view

### Customizing the channel selection

To customize the channel selection, proceed as follows:



1. Open the **Makalu Automation multichannel view** as described in section [Accessing the multichannel view](#).
2. At the top right click **Add Channel**.  
*The channel selection menu is displayed.*
3. Select the channels to be displayed.
4. Confirm your selection, by clicking **Apply**.

The selected channels are displayed as tiles and can be monitored.

### Customizing a channel tile

The display of the tiles can be customized. Rundown and audio level peak meter can be either shown or hidden. Additionally, the rundown can be displayed either collapsed or expanded.

To customize a channel tile, proceed as follows:

1. Open the **Makalu Automation multichannel view** as described in section [Accessing the multichannel view](#).
2. Select the channel tile to be customized.  
*The tile is highlighted with a white border.*
3. To expand or collapse the channel rundown display, click the **Expand/Collapse** icon  at the bottom right corner of the tile.
4. Click the **Settings** icon  at the bottom center of the screen.  
*A settings menu is displayed that enables you to show/hide the rundown and audio level peak meter.*
5. In the settings menu select the elements to be displayed and deselect the elements to hide.

*The tile display is updated based on the selected elements.*

## 2.4.3 Detailed channel view

### Detailed channel view

#### OVERVIEW

The detailed channel view is a UI for manually controlling a single Makalu playout channel. Each playout channel is at least connected to one individually controllable player, that runs on a playout node. If a channel is operated redundantly it is connected to two players (main and backup) which can simultaneously be controlled via the detailed channel view.

Each player seamlessly plays the video content of a linear playout channel based on a rundown, that consists of playlists, shows, and clips. The playlists are created via the [Makalu Traffic](#) planning component.

#### ACCESSING THE DETAILED CHANNEL VIEW

To access the **Makalu Automation detailed channel view** (see section [Automation](#)), proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the middle preview column click the name of the channel to be opened.

*The detailed view of the selected channel is opened.*

The screenshot displays the Makalu Automation detailed channel view. The interface is dark-themed and includes the following elements:

- Top Navigation:** 'Media', 'Traffic', 'Automation' (selected), 'Streams'.
- Central Control Area:**
  - Top left: 'ELF | Ref: Main', 'GMT -02:00', '12:52:21', 'All systems operational'.
  - Top center: 'Remaining Event - 00:02:06.16', 'Remaining Show - 01:20:08.21', 'Next Live - 00:16:28.21', 'Next Missing - 00:06:07.11', 'ON TIME'.
  - Top right: 'P/W Break-Block1'.
  - Center: Video player showing a desert landscape, '6:11 / 14:47'.
  - Bottom: Playback controls (play, stop, seek, volume, full screen).
- Left Sidebar (Playlist Table):**

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
Loop		Makalu_Demo_08	-00:02:06	OnAir	OnAir		
Loop		Break-Block1	00:03:40.03	Due	Due		
Loop		Break-Block1	00:00:20.07	Ready	Ready		
Loop		BREAK-BLOCK1	00:02:30.00	Placeholder	Placeholder		
Loop		Makalu_Demo_02	00:00:42.13	Ready	Ready		
Loop		Break-Block2	00:03:32.01	Ready	Ready		
Loop		S039415E001R01	00:00:04.00	Ready	Ready		
Loop		Makalu_Demo_03	00:00:53.06	Ready	Ready		
Loop		BP-0000000273	00:00:05.24	Ready	Ready		
Loop		Makalu_Demo_03	00:00:53.06	Ready	Ready		
Loop		Recording Test 3 Crash R...	00:01:40.23	Ready	Ready		
Loop		Recording Test 3 Crash R...	00:00:30.00	Ready	Ready		
Loop		Recording Test 3 Crash R...	00:00:35.11	Ready	Ready		
Loop		BP-0000000332	00:00:02.24	Ready	Ready		
Loop		BP-0000000328	00:00:02.24	Ready	Ready		
- Right Sidebar:**
  - Media Title: Example\_File\_09
  - Media ID: [ID]
  - Duration: 00:14:47.06
  - Imported: 03.04.2024 11:47:26.02
  - Modified: 03.04.2024 11:48:18.19
  - Expiry date: 03.05.2024 11:47:26.00
  - Size: 1.06 GB
  - Format: MP4
  - Path: Clips/Documentation/Example\_File\_09.mp4
  - Thumb: Clips/Documentation/Thumbnail/Example\_File\_09.png
  - LowRes: Clips/Documentation/Proxy/Example\_File\_09.mp4
  - Position: 00:06:11.02, Remaining: 00:08:36.03
  - Mark In: 00:00:00.00, Mark Out: 00:14:47.05
  - Duration: 00:14:47.06
  - Search over all videos: [X] No filter, All resolutions, 1 - 9 of 9
  - Playoutdata: Live, Placeholder, Secondary Events, Clips, Bumper, Commercials, Documentation, NAB, Promo, Recordings, Weather.
  - Media Library Table:

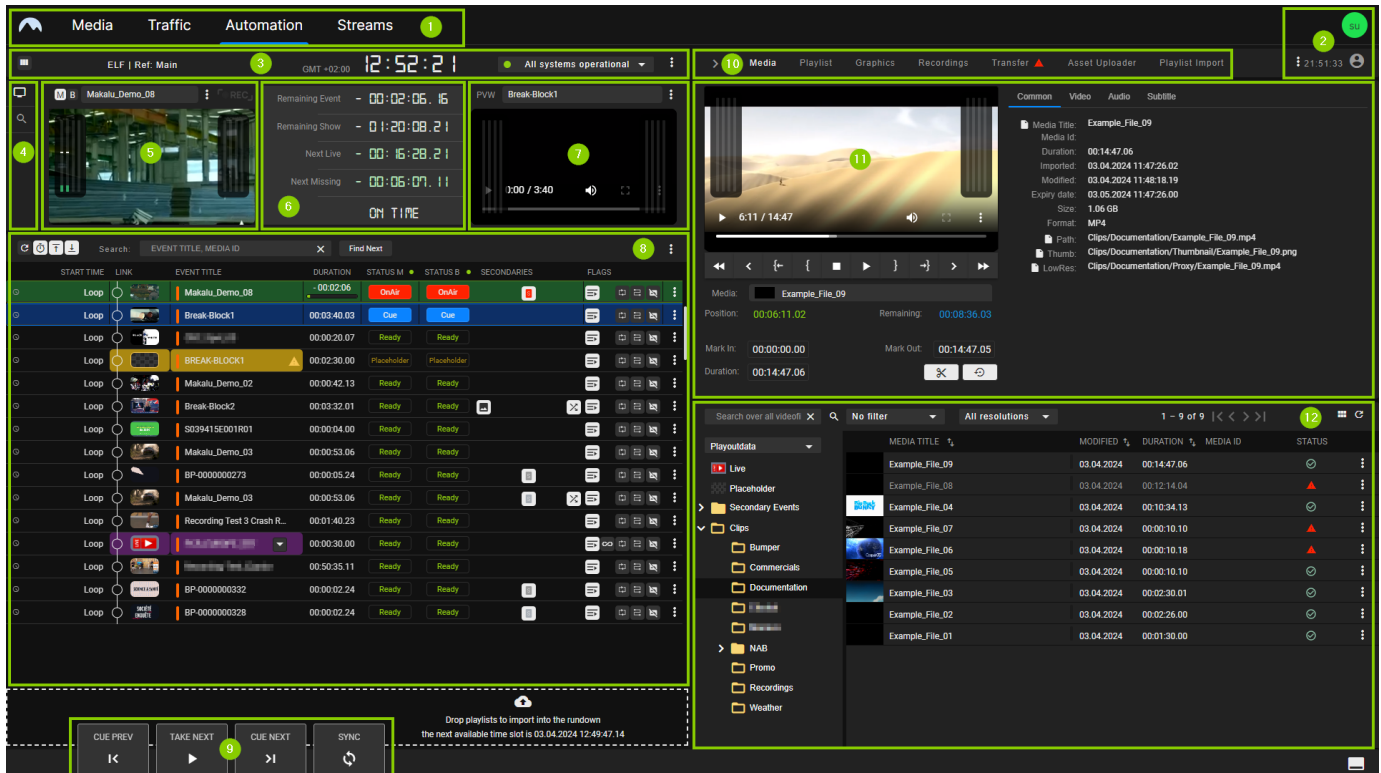
MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06	[ID]	🟢
Example_File_08	03.04.2024	00:12:14.04	[ID]	🟢
Example_File_04	03.04.2024	00:10:34.13	[ID]	🟢
Example_File_07	03.04.2024	00:00:10.10	[ID]	🟢
Example_File_06	03.04.2024	00:00:10.18	[ID]	🔴
Example_File_05	03.04.2024	00:00:10.10	[ID]	🟢
Example_File_03	03.04.2024	00:02:30.01	[ID]	🟢
Example_File_02	03.04.2024	00:02:26.00	[ID]	🟢
Example_File_01	03.04.2024	00:01:30.00	[ID]	🟢

Automation - Detailed channel view

## User interface

### COMPONENT OVERVIEW

The UI consists of the following elements:



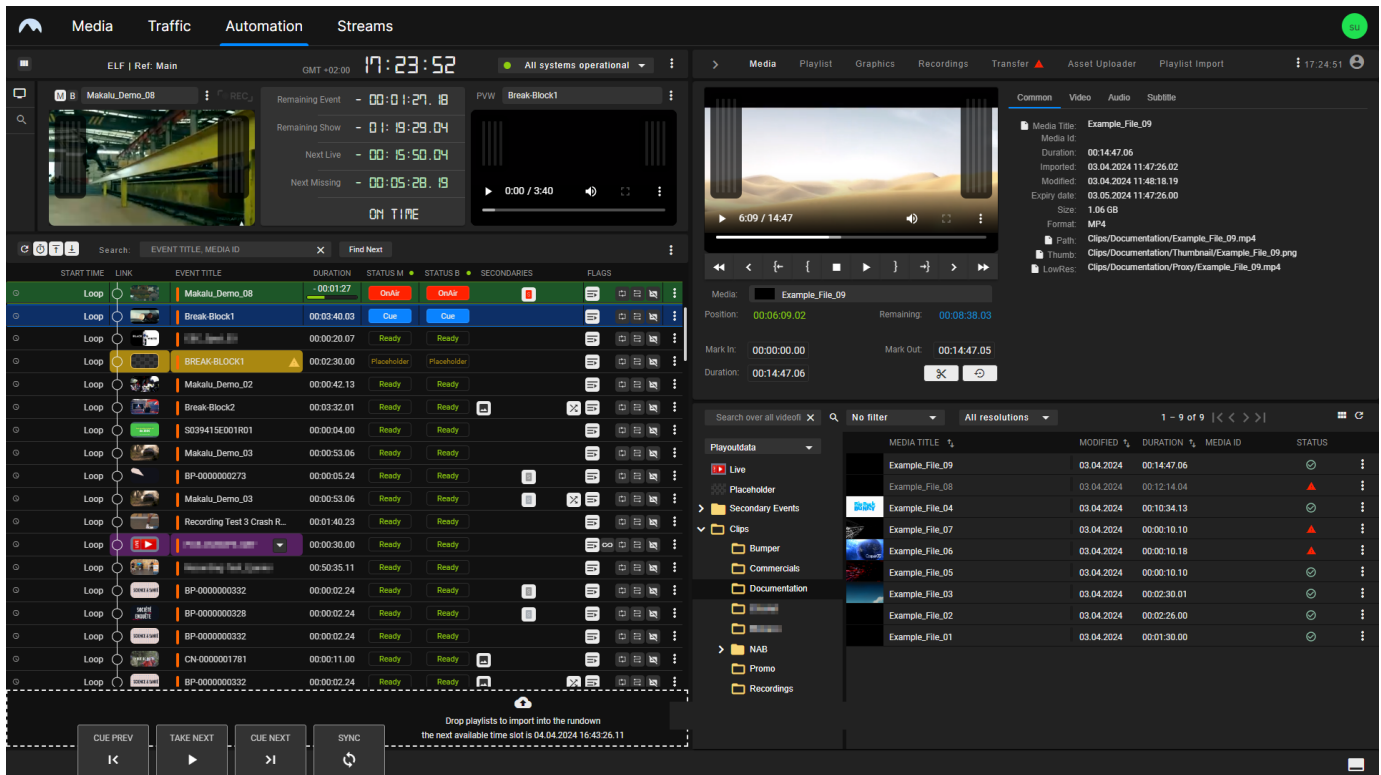
Automation - UI components

1. Makalu UI main navigation
2. User menu, remaining session time, and additional links
3. Channel/system information
4. Preview area navigation
5. Channel preview
6. Time-related rundown information
7. Next clip preview
8. Channel rundown
9. Rundown and player controls
10. Collapse/expand toggle for the right side and navigation to the areas [media](#), [playlist](#), [graphics](#), [recordings](#), [transfer](#), [Asset Uploader](#), and [playlist import](#)
11. Media asset preview and information (content varies depending on the selected navigation tab/area)
12. Media asset list (content varies depending on the selected navigation tab)

### VIEW MODES

The detailed channel view includes two basic view modes, the "default" and the "simple view", providing users/operators with different usage options.

When you first open the detailed channel view, the default view is enabled. It splits the view in the middle into two sides of the same width. On the left side, it displays channel information, preview, and rundown. On the right side, it displays all other areas (for example, media, playlist, graphics, etc.).



Automation - Default view


The second view mode is referred to as the "simple view" and is more focused on the rundown. It uses all available space on the left side of the screen for the rundown and displays the preview and all other areas on the right side. To switch between the two views, click the **User** icon at the top right and select or deselect **Show simple view**.

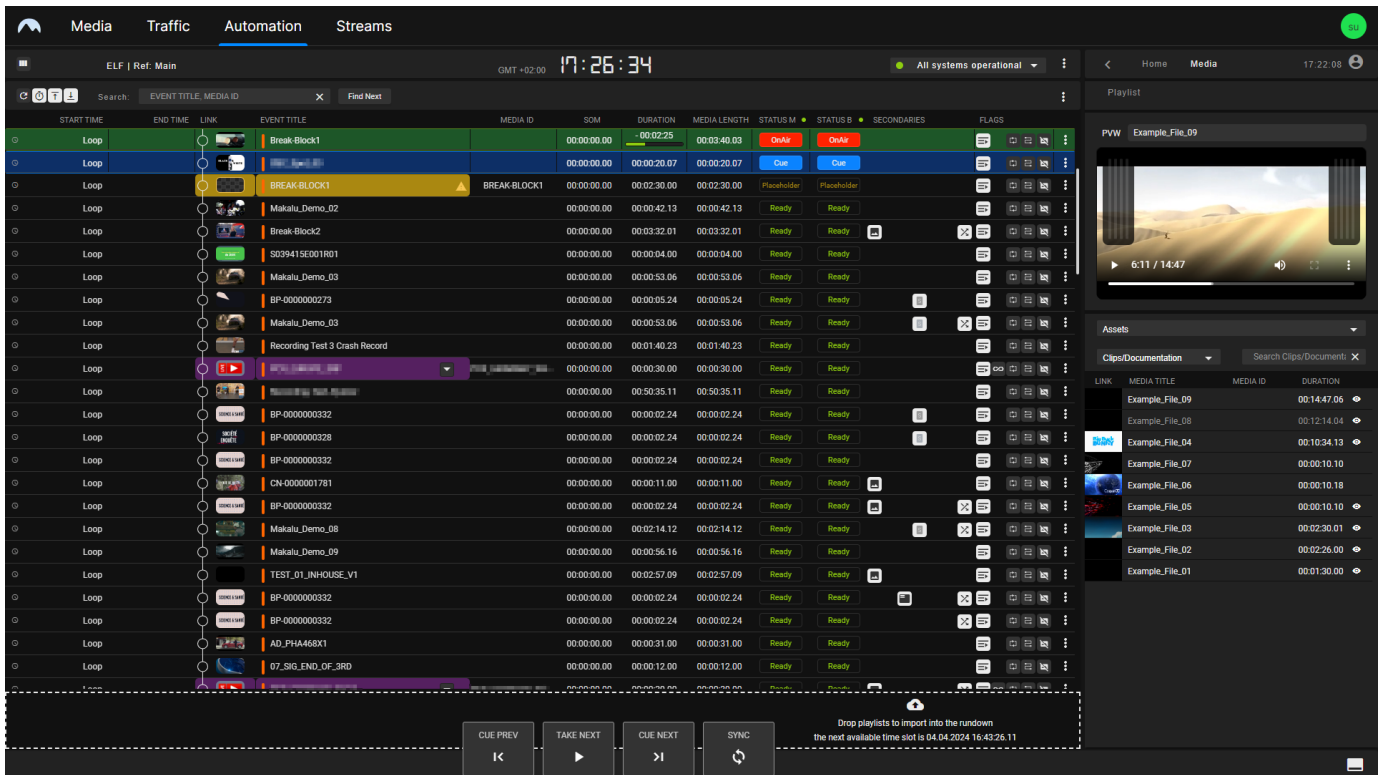
The screenshot displays the 'Automation - Simple view' interface. The top navigation bar includes 'Media', 'Traffic', 'Automation', and 'Streams'. The main interface is divided into two primary areas:

- Automation (Left):** A table listing events with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The events include 'Makalu\_Demo\_08', 'Break-Block1', 'BREAK-BL.DICK1', 'Makalu\_Demo\_02', 'Break-Block2', 'S839415E001R01', 'Makalu\_Demo\_03', 'BP-0000000273', 'Recording Test 3 Crash R...', 'BP-0000000332', 'BP-0000000328', 'CN-0000001781', 'TEST\_01\_INHOUSE\_V1', and 'AD\_PHA468X1'. Each event has a 'Loop' icon, a 'Ready' or 'OnAir' status, and various control icons.
- Media (Right):** A video player showing 'Example\_File\_09' with a duration of 00:14:47. Below the player, a table lists media assets with columns for 'MEDIA TITLE', 'MODIFIED', 'DURATION', 'MEDIA ID', and 'STATUS'. The assets include 'Example\_File\_09', 'Example\_File\_08', 'Example\_File\_04', 'Example\_File\_07', 'Example\_File\_05', 'Example\_File\_03', 'Example\_File\_02', and 'Example\_File\_01'. A 'Playayoutdata' sidebar on the left of the media section shows a tree view of content categories like 'Live', 'Placeholder', 'Secondary Events', 'Clips', 'Bumper', 'Commercials', 'Documentation', 'NAB', 'Promo', 'Recordings', and 'Weather'.

At the bottom of the automation section, there are control buttons for 'CUE PREV', 'TAKE NEXT', 'CUE NEXT', and 'SYNC'. A message at the bottom center reads: 'Drop playlists to import into the rundown the next available time slot is 04.04.2024 16:43:26.11'.

### Automation - Simple view

In addition, you can collapse and expand the right side, by clicking the **Angle** icon  to the left of the **Home** tab. This display variant uses most of the screen space for the rundown on the left side and minimizes the contents of the **Home**, **Media**, and **Playlist** tabs on the right side, which creates more space for displaying additional columns in the rundown. It is therefore referred to as the "rundown-centric view".



Automation - Rundown-centric view

MAKALU UI MAIN NAVIGATION

Via the main navigation, you can access all functional areas of Makalu at any time, by clicking the corresponding tab.

**Tip**

You can also return to the Makalu Hub, by clicking the Makalu logo at the top left.

USER MENU

The user menu provides the following options:


Option	Purpose
User name	Displays the name of the user currently signed in
Build	Displays the build/version number of the detailed channel view
Open the documentation	Open the Makalu user manual
Copy API Token	Copy an API token to the clipboard (only relevant for development purposes)
Show simple view	Enable/disable the <a href="#">simple view</a>
Switch to Main/Backup	Switch the reference player

Option	Purpose
Logout	Log the current user out of the Makalu system

## CHANNEL/SYSTEM INFORMATION

This area includes the following elements/information:

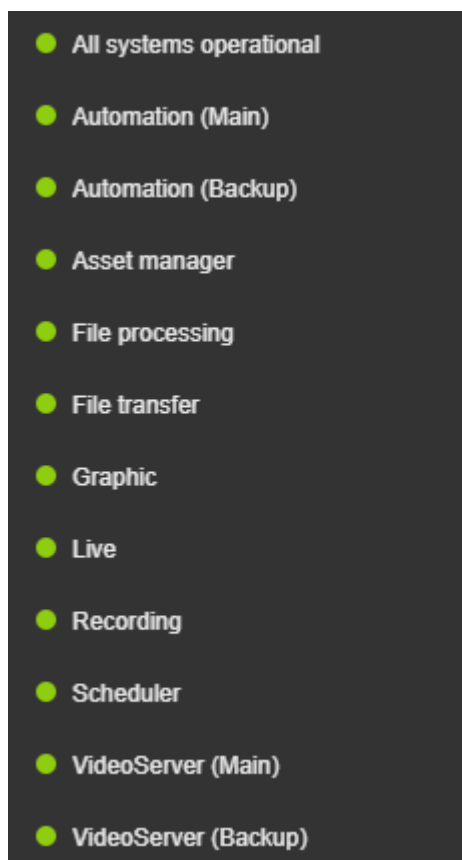
- Link to multichannel view (only available for redundant channels)
- Channel name
- Reference player (displays "Main" or "Backup", only available for redundant channels)
- System time
- System health status indicator

To open the multichannel view, click the multichannel icon  on the left side.

The system time displays the local time of the current user related to GMT/UTC.

The system health status indicator displays the current operating status of the most important internal system components (for example, connection to backend components and player status).


To display an expanded list of individual components, click the system status indicator.



*Automation - System health status expanded*



A green indicator means that the component runs normally, while a red indicator means that it has an error.



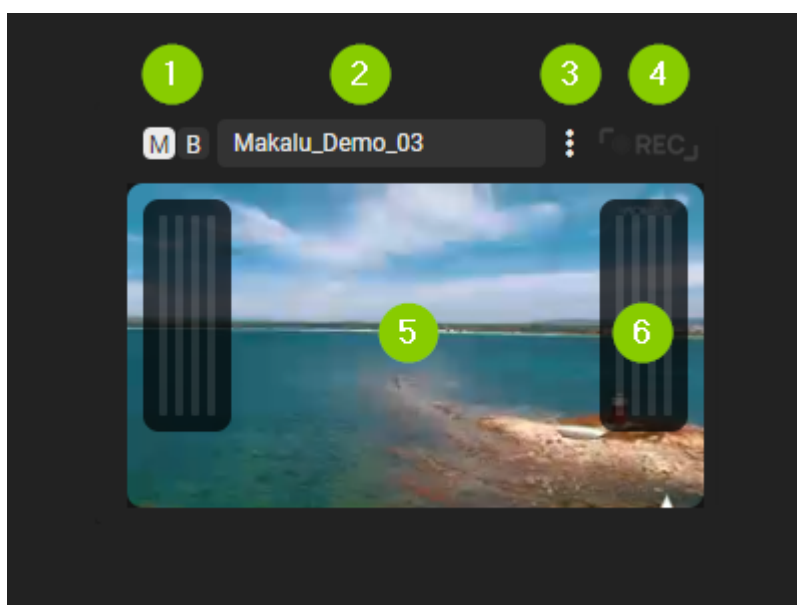
The menu button to the right of the system health status  provides access to the following channel actions:

Action	Purpose
Restart main/backup player	Restart the main or backup player (requires additional confirmation via dialog)  <b>Warning:</b> Restart the player only in case of an emergency (for example, if a player error occurs). Restarting the player takes a short amount of time. During this time no output signal is generated.
Restart main/backup preview	Restart the main or backup preview component (requires additional confirmation via dialog)  <b>Notice:</b> Manually restarting the preview is only necessary if the preview is not displayed as expected.
Delete graphics	Remove all currently displayed graphics secondary events (applies to the main and backup player, if redundancy is enabled)  <b>Notice:</b> This can be useful in case of an emergency (for example, if a player error occurs or if graphics are not automatically removed as expected).

#### PREVIEW AREA NAVIGATION

The icons in the preview area navigation enable you to switch between the preview () and the search/replace view (). For more information about the search/replace view, see section [Searching for and replacing clips](#).

#### CHANNEL PREVIEW




Automation - Channel preview

The channel preview consists of the following elements:

1. Source selector
2. Clip name display
3. Options menu
4. Recording indicator
5. Preview player
6. Peak audio meter

The source selector in the top left corner is only available for redundant channels. It enables you to select the source of the preview player below, by switching between main ("M") and backup ("B"). For non-redundant channels, there is no source selector. Instead, the source display shows "PGM".

To the right of the source selector, the name of the clip currently playing is displayed.

Right beside the clip name display the following actions are available via the **Options** menu .


Action	Purpose
Show Main/Backup	Select the source of the preview player below (identical to the source selector)
Show Audio	Open the edit dialog for the clip currently playing to edit the audio mapping (for more information about how to use the audio mapping feature, see section <a href="#">Audio mapping</a> )
Reload preview	Reload the preview player

In the right upper corner, the recording indicator displays "REC" if a recording is currently in progress (for example, if the clip currently playing is a live source that is being recorded).

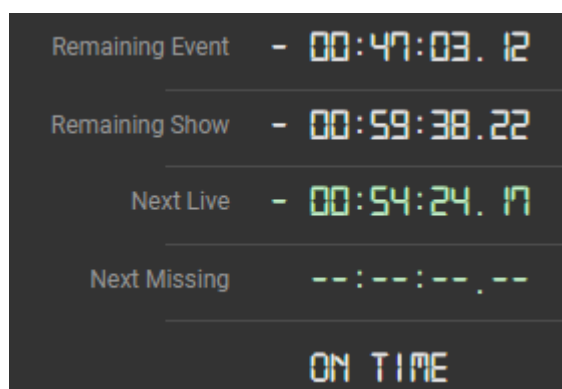
The preview player displays a low-res version of the current player output (backchannel) in real time. It also includes a peak audio meter that supports up to eight audio tracks and indicates the current audio signal level of the channel output.

#### Tip

If you want to use a rundown-focused view you can hide this area by selecting **User menu > Show simple view**. As a result, the rundown list is extended to the full height of the left side.

In addition, you can collapse and expand the right side, by clicking the **Angle** icon  to the left of the **media** tab.

## TIME-RELATED RUNDOWN INFORMATION



Automation - Time-related rundown information


This area provides the following information:

Element	Description
Remaining Event	<ul style="list-style-type: none"> <li>• Remaining playback time of the clip currently playing, or</li> <li>• "LOOP" (the current clip is played in a loop until the operator manually triggers the start of the next clip)</li> </ul>
Remaining Show	<ul style="list-style-type: none"> <li>• Remaining playback time of the current show, or</li> <li>• "LOOP" (the current clip is played in a loop until the operator manually triggers the start of the next clip)</li> </ul>
Next Live	<ul style="list-style-type: none"> <li>• Remaining time until the next live clip in the rundown, or</li> <li>• "LIVE" (if a live source is currently playing)</li> </ul>
Next Missing	Remaining time until the next missing element in the rundown (for example, a placeholder for which the corresponding file is not yet available)

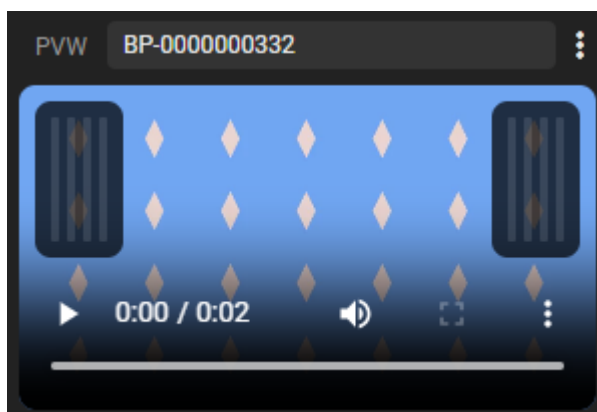
Element	Description
On time / Overtime / Undertime	<ul style="list-style-type: none"> <li>• "ON TIME" or time difference regarding the scheduled time of elements in the rundown</li> <li>• Relevant, for example, if a live clip runs shorter or longer than originally planned</li> <li>• "OVERTIME" - If a live clip runs longer than originally planned, the start times of all subsequent events in the rundown are automatically updated and rescheduled to a later time (the times displayed in the rundown are updated accordingly)</li> <li>• "UNDERTIME" - If there is a gap between the scheduled end time of a clip and the start time of the subsequent clip</li> </ul> <p><b>Tip:</b> You can jump to the corresponding clip or gap in the rundown, by clicking the displayed time status.</p>

#### Tip

If you want to use a rundown-focused view you can hide this area by selecting **User menu > Show simple view**. As a result, the rundown list is extended to the full height of the left side.

In addition, you can collapse and expand the right side, by clicking the **Angle** icon  to the left of the **media** tab.

#### NEXT CLIP PREVIEW




*Automation - Next clip preview*

The preview player in this area can either be used to display a preview of the next clip to be played (the clip currently cued) or to display a preview of the backup player output/backchannel (only available for redundant channels). It is useful, for example, to preview and check a clip or a live source before it goes on-air. It also includes a peak audio meter that supports up to eight audio tracks and indicates the current audio signal level of the channel output.

Depending on the currently selected source, in the top left corner, either "PVW" (preview of the next cued clip) or "B" (preview of the backup player) is displayed. Using it to display the preview of the backup player enables you to preview the main and backup player simultaneously.


To the right of the selected source, the name of the next cued clip is displayed.

Right beside the clip name display the following actions are available via the **Options** menu :

Action	Purpose
Show Backup/Preview	Select the source of the preview player below
Reload preview	Reload the preview player

 **Tip**

If you want to use a rundown-focused view you can hide this area by selecting **User menu > Show simple view**. As a result, the rundown list is extended to the full height of the left side.

In addition, you can collapse and expand the right side, by clicking the **Angle** icon  to the left of the **media** tab.

CHANNEL RUNDOWN


The screenshot displays a channel rundown interface with the following elements:


- Search Bar:** Search: EVENT TITLE, MEDIA ID. Find Next button.
- Table Columns:** START TIME, LINK, EVENT TITLE, DURATION, STATUS M, STATUS B, SECONDARIES, FLAGS.
- Table Rows:** Multiple rows of clips, each with a 'Loop' button, a thumbnail, an event title (e.g., CN-000001781, BP-0000000332, Makalu\_Demo\_08), a duration, and status indicators (OnAir, Cue, Ready).
- Bottom Control Bar:** CUE PREV, TAKE NEXT, CUE NEXT, SYNC buttons.
- Message:** Drop playlists to import into the rundown. the next available time slot is 04.04.2024 16:43:26.11

Automation - Channel rundown

This area contains the rundown of the current channel. The rundown list contains all playlists, shows, and clips that are scheduled for playback. If the display of playlists and shows is enabled for this list, they can be expanded and collapsed.





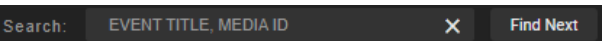

### Tip











To enable or disable the display of playlists and shows, use the **Options** menu  in the toolbar above the rundown list and enable or display the options **Display playlists** and/or **Display Shows**.

You can also use this menu to enable/display the display of additional columns. If you want to enable and display all available columns, an ultrawide monitor is recommended. Alternatively, you can collapse the right side of the UI, by clicking the **Angle** icon  to the left of the **media** tab. This uses most of the screen space for the rundown and minimizes the preview and media areas on the right side.








If a clip has assigned secondary events (for example, graphics), it can also be expanded and the corresponding secondary events are listed.

Depending on the type of the currently selected element in the rundown, the toolbar above contains the following elements:


Icon/Element	Description
	Reload the rundown and update all clip statuses
	Automatically expand the rundown and jump to the section of the rundown that includes the current on-air clip every 15 seconds  <i>Tip: Deactivate this function to make changes in the rundown undisturbed.</i>
	Jump to and select the previous playlist
	Jump to and select the next playlist
	Search for clips based on their <b>Title</b> or <b>Media ID</b> and find their next (future) occurrence in the rundown  <i>Notice: This function is helpful, for example, if you want to quickly find out when a specific clip is scheduled.</i>  <i>Tip: If you want to check the date a specific placeholder was first used in the rundown, search for the placeholder in the media asset list in the <a href="#">Media</a> tab. If you select a placeholder in this list, its first occurrence in the rundown is displayed in column <b>First Appearance</b>.</i>
	Group selected clips (for more information, see section <a href="#">Using groups</a> )









Icon/Element	Description
	Ungroup selected clips (for more information, see section <a href="#">Using groups</a> )
	Move the selected clip to the top (set it as first clip of the show) (for more information, see section <a href="#">Moving clips</a> )
	Move the selected clip one position up (for more information, see section <a href="#">Moving clips</a> )
	Move the selected clip one position down (for more information, see section <a href="#">Moving clips</a> )
	Move the selected clip to the bottom (set it as the last clip of the show) (for more information, see section <a href="#">Moving clips</a> )
	Remove fixed scheduled start time from selected element (for more information, see section <a href="#">Deleting a fixed start time</a> )
	Add the default graphic to the selected playlist, show, or clip (for more information, see section <a href="#">Assigning or removing the default graphic</a> )
	Remove the default graphic from the selected playlist, show, or clip (for more information, see section <a href="#">Assigning or removing the default graphic</a> )
	Remove the selected playlist or clip
	<p>Open the options menu to access additional actions:</p> <ul style="list-style-type: none"> <li>• Display playlists - Display/hide playlists (if enabled, playlists can be expanded and collapsed in the rundown)</li> <li>• Display shows - Display/hide shows (if enabled, shows can be expanded and collapsed in the rundown)</li> <li>• Display mediaId - Display/hide the Media ID column</li> <li>• Display backup status - Display the <b>Status</b> column also for the backup player (only available for redundant channels - if disabled, the Status column is only displayed for the main player)</li> <li>• Show missing assets - Open the <b>Missing assets</b> menu to search for missing assets (see section <a href="#">Searching for and requesting missing media</a>)</li> </ul>


The actual rundown list includes the following information:

Column	Description
Clock icon	<p>Configure a fixed start time of a show/first clip of a show</p> <p>Depending on whether a fixed time is set or not, the clock icon is displayed as follows:</p> <ul style="list-style-type: none"> <li>•  Small gray clock icon - show/first clip of a show does not have a fixed start time</li> <li>•  Large white clock icon - show/first clip of a show has a fixed start time</li> </ul> <p><b>Tip:</b> To set a fixed start time click the clock icon.</p>
Start Time	<p>Scheduled/actual start date and time of a playlist, show, or clip</p> <p><b>Notice:</b> Displays "Loop" if a clip is part of a group that is being looped.</p>
Link	<p>Distinguish playlists, shows, and clips, expand/collapse shows, display clip thumbnail</p> <p>The different types of elements are marked as follows:</p> <ul style="list-style-type: none"> <li>• Playlist - No icon</li> <li>•  /  Circle with arrow icon - Show collapsed/expanded</li> <li>•  Circle icon - Clip</li> </ul> <p><b>Tip:</b> To expand/collapse a show, click the circle with arrow icon of the corresponding show.</p>
Event Title	<p>Name of the primary or secondary event (playlist, show, or clip), indicator for grouped clips, source selection for live sources</p> <p><b>Notice:</b> Grouped clips are highlighted with an orange indicator  (if multiple groups are used, each group is highlighted in a distinct color).</p> <p><b>Tip:</b> For clips of type "Live", you can change the source to be used, by clicking the <b>Select source</b> icon  and selecting the corresponding live source.</p>



Column	Description
Media ID (optional)	<p>Clip Media ID (either a specific ID or, in the case of a live clip, the name of the selected live source)</p> <p><b>Tip:</b> This column is hidden by default. You can display it by enabling it via the <b>Options</b> menu  in the toolbar above the rundown.</p>
Duration	<p>Total playlist, show, clip duration, and remaining time of show/clip currently playing (incl. playback progress bar and countdown during the last 10 seconds before a clip change)</p> <p><b>Tip:</b> To open the <a href="#">Edit clip menu</a>, click the <i>Duration</i> field of the corresponding clip.</p>
Status	<p>Clip status, possible values:</p> <ul style="list-style-type: none"> <li>• Ready (clip is ready to be played)</li> <li>• Cue (next clip to be played, prepared by the player)</li> <li>• On Air (clip currently playing)</li> <li>• Placeholder (clip is a virtual placeholder)</li> <li>• Pending (the file is currently being transferred from the ingest storage to the playout node storage)</li> <li>• Cached (file is cached by the player)</li> <li>• Error (file cannot be played)</li> </ul>

Column	Description
Secondaries	<p>Indicates if there are secondary events assigned to the show or clip</p> <p>The secondary event types are distinguished by the following icons:</p> <ul style="list-style-type: none"> <li>•  - Graphics</li> <li>•  - Recording</li> <li>•  - Script</li> <li>•  - Splicing</li> <li>•  - Subtitle</li> <li>•  - Routing</li> <li>•  - Audio Mapping</li> </ul> <p><b>Tip:</b> To expand/collapse the list of assigned secondary events, click the corresponding secondaries icon of the corresponding clip or show. You can then also edit the properties of each secondary event (except subtitle secondary events), by clicking the <b>Options</b> icon  on the right side and selecting <b>Edit Secondary</b>.</p>
Flags	Clip flags that define how each clip should be played










Column	Description
	<p>Open the options menu for accessing additional actions</p> <p>Depending on the selected element the available actions are:</p> <ul style="list-style-type: none"> <li>• Playlist <ul style="list-style-type: none"> <li>• Save as - Save the playlist internally under the selected name to make it reusable (first opens a dialog for selecting the playlist name)</li> <li>• Delete playlist - Remove the selected playlist from the rundown</li> </ul> </li> <li>• Show <ul style="list-style-type: none"> <li>• Delete show - Remove the selected show from the rundown</li> </ul> </li> <li>• Clip <ul style="list-style-type: none"> <li>• Browse for clip - Open the selected clip in the preview in the <a href="#">Media</a> tab and reveal it in the storage folder structure</li> <li>• Clip info - Open the <b>Clip info</b> menu to display additional clip information</li> <li>• Fix duration - Reset the clip length to the physical media length</li> <li>• Edit clip - Open the <b>Edit clip</b> menu</li> <li>• Reload clip - Update the statuses of the selected clip</li> <li>• Delete clip - Remove the selected clip from the rundown</li> </ul> </li> </ul>

Secondary events assigned to a clip are listed with the following information:




Column	Description
Start-Offset	Offset until the secondary event is triggered (based on the start of the corresponding clip)
Type	Type of the secondary event (for example, Singular.Live graphics, Splicing, Script)
Title	Title of the secondary event
Duration	Duration of the secondary event

Column	Description
Flags	Delete button for removing the secondary event from the clip


Depending on the type of the event and/or the severity level, the following highlight (row background) colors and icons are used in the rundown:

Color	Icon	Event type/severity level
 Yellow		Placeholder
 Purple		Live
 Red		Missing
 Orange		Gap
 Green		On air
 Blue		Cued

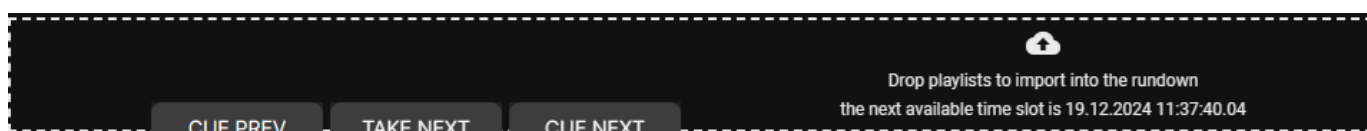
The duration of an event is also highlighted in different colors, depending on whether the duration corresponds to the physical media length or is set shorter/longer. In this case, the following colors are used in the duration field:

Color	Duration
 White	Set duration corresponds exactly to the physical media length
 Yellow	Set duration is shorter than the physical media length
 Red	Set duration is longer than the physical media length (also applies to live elements with activated <a href="#">Open End flag</a> )

#### Tip: Resetting the duration of an event

If the set duration of an event is either shorter or longer than the physical media length (the duration is highlighted either in yellow or red), and you want to reset the duration to the exact physical media length, use the **Options** menu  on the right side of the event row and select **Fix duration**.

Below the rundown list, a dropzone is available for adding playlists to the rundown via drag and drop.



Automation - Dropzone for adding playlists to the rundown

## RUNDOWN AND PLAYER CONTROLS





Automation - Rundown and player controls

Via the rundown and player controls you can manually trigger actions to control the player(s) of the corresponding channel. By default, these actions are triggered immediately when you click the corresponding button. The behavior of the controls is customizable. There is an optional security feature, that, if enabled, highlights the selected action first and requires you to confirm the actual trigger with an additional click.

The rundown and player controls provide the following actions:

Action	Description
Cue Prev	Prepare the previous clip for playback
Take Next	Start the playback of the currently prepared/cued clip
Cue Next	Either prepare the first clip in the rundown for playback (if no clip is currently cued) or prepare the next clip after the currently cued clip for playback
Sync	Synchronize rundown and player  <b>Notice:</b> This action should only be used in case of an error, if rundown and player are not synchronized as expected.
Uncue	Uncue the clip currently cued
Stop	Stop the playback of the clip currently playing
Eject	Stop playback and eject player (set to idle)

### **i** Notice

The control buttons on the left side are always displayed by default. The buttons on the right side are hidden by default and can be manually displayed. If these buttons are not displayed, you can display them by clicking the **Show controls icon**  at the bottom right of the screen. To hide these buttons, click the **Hide controls icon**  at the bottom right of the screen.

## MEDIA

The screenshot displays the MEDIA tab interface, which is divided into three main sections:

- Video Player (1):** Shows a video preview of a landscape scene. Below the player are playback controls (play, volume, progress, full screen) and metadata for the selected asset:
  - Media: Example\_File\_04
  - Position: 00:03:48.21
  - Remaining: 00:06:45.16
  - Mark In: 00:00:00.00
  - Mark Out: 00:10:34.12
  - Duration: 00:10:34.13
- Metadata Panel (2):** Displays detailed information for the selected asset:
  - Common tab selected.
  - Media Title: Example\_File\_04
  - Media Id: [Empty]
  - Duration: 00:10:34.13
  - Imported: 13.06.2024 10:40:47.00
  - Modified: 13.06.2024 10:43:45.02
  - Expiry date: 13.07.2024 10:40:47.00
  - Size: 808.68 MB
  - Format: MP4
  - Path: Clips/Documentation/Example\_File\_04.mp4
  - Thumb: Clips/Documentation/Thumbnail/Example\_File\_04.png
  - LowRes: Clips/Documentation/Proxy/Example\_File\_04.mp4
- Asset List (3):** A table listing available media assets with columns for MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS.
 















MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	13.06.2024	00:14:47.06		✓
Example_File_08	13.06.2024	00:12:14.04		⚠
Example_File_04	13.06.2024	00:10:34.13		✓
Example_File_07	13.06.2024	00:00:10.10		⚠
Example_File_06	13.06.2024	00:00:10.18		⚠
Example_File_06_v2	13.06.2024	00:00:10.18		⚠
Example_File_05_v2	13.06.2024	00:00:10.10		✓
Example_File_05	13.06.2024	00:00:10.10		✓
Example_File_03	13.06.2024	00:02:30.01		✓
Example_File_02	13.06.2024	00:02:26.00		✓
Example_File_01	13.06.2024	00:01:30.00		✓

Automation - Media tab

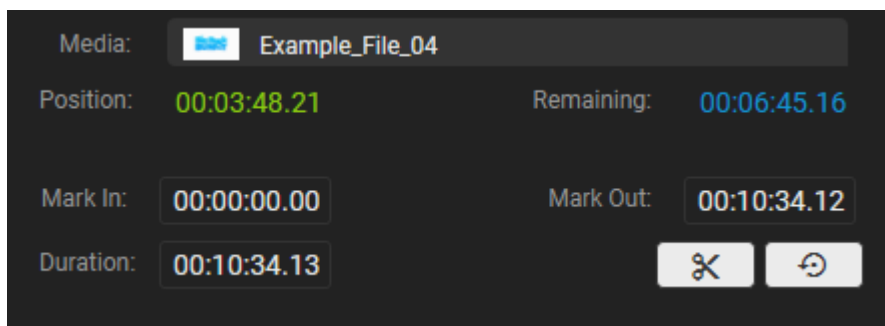
The **Media** tab contains the following elements:

1. Media asset preview
2. Media asset metadata
3. List of available media assets



The preview player provides the following controls:

Icon	Description
	Fast rewind
	Previous frame
	Jump to mark in
	Set mark in
	Stop
	Play
	Set mark out
	Jump to mark out
	Next frame
	Fast forward
	Mute/unmute audio, set volume level
	Hide/show peak audio meter
	Enable/disable full-screen playback
	Mute/unmute audio channel

Below the player controls the following time-related information of the file currently being previewed is displayed:



Automation - Preview (time-related information)

Element/Icon	Description
Media/thumbnail with file name	Draggable element for adding the media asset to a show in the rundown, including the currently set mark in and mark out timecodes
Position	Current playback timecode
Remaining	Remaining playback duration
Mark In	Mark in timecode
Mark Out	Mark out timecode
Duration	Total media asset duration
	Create a reusable trimmed media asset by applying the currently set mark in and mark out timecodes (for more information, see section <a href="#">Creating trimmed media and adding it to the rundown</a> )
	Reset mark in and mark out


To the right of the player window, the technical metadata of the file currently being previewed is listed. This section is divided into the tabs **Common**, **Video**, **Audio**, and **Subtitle** metadata.



Common	Video	Audio	Subtitle
Media Title	Example_File_04		
Media Id			
Duration	00:10:34.13		
Imported	13.06.2024 10:40:47.00		
Modified	13.06.2024 10:43:45.02		
Expiry date	13.07.2024 10:40:47.00		
Size	808.68 MB		
Format	MP4		
Path	Clips/Documentation/Example_File_04.mp4		
Thumb	Clips/Documentation/Thumbnail/Example_File_04.png		
LowRes	Clips/Documentation/Proxy/Example_File_04.mp4		

Automation - File metadata



#### Tip

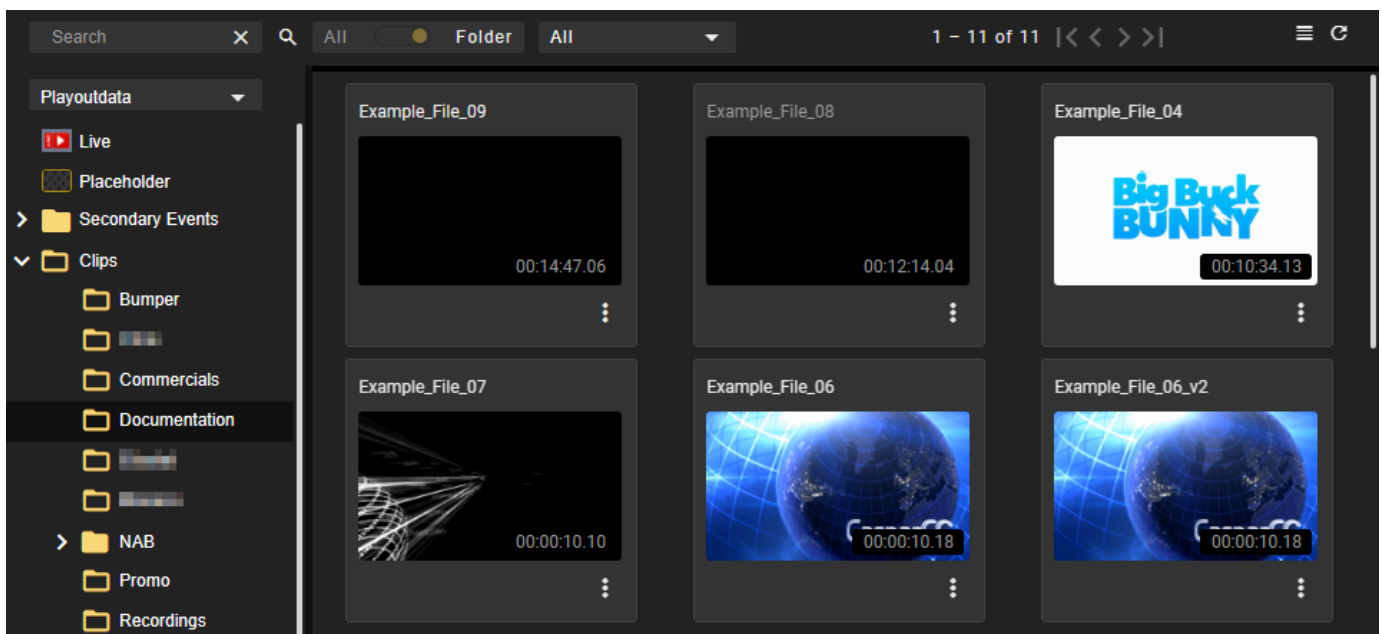
If a **Copy icon**  is displayed on the left side of a metadata item, you can copy its value to the clipboard, by clicking the corresponding icon. You can paste it, for example, into the search field above the rundown to search for specific clips based on their **Title** or **Media ID**.

Below the preview player and the time-related information, the media asset list is displayed. Depending on the selected entry in the **Source** dropdown menu at the top left, this section either lists all files available on the ingest storage or on the playout nodes that are assigned to the currently selected channel. By default, the "table view" is enabled for the media asset list.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	13.06.2024	00:14:47.06		✓
Example_File_08	13.06.2024	00:12:14.04		▲
Example_File_04	13.06.2024	00:10:34.13		✓
Example_File_07	13.06.2024	00:00:10.10		▲
Example_File_06	13.06.2024	00:00:10.18		▲
Example_File_06_v2	13.06.2024	00:00:10.18		▲
Example_File_05_v2	13.06.2024	00:00:10.10		✓
Example_File_05	13.06.2024	00:00:10.10		✓
Example_File_03	13.06.2024	00:02:30.01		✓
Example_File_02	13.06.2024	00:02:26.00		✓
Example_File_01	13.06.2024	00:01:30.00		✓

Automation - Media asset list (table view)

Alternatively, the media asset list also provides the "grid view". It displays each media asset with a large thumbnail image and the duration as an overlay. You can switch between both modes via the view switch  /  at the top right above the media asset list.



Automation - Media asset list (grid view)

### Tip

While the grid view is enabled, you can preview available live sources, by selecting **Live** as asset type and hovering your mouse over the corresponding live source thumbnail image.

The toolbar of the media asset list contains the following elements:

Playoutdata ▼

Select source




The source of the media assets to be displayed in the media asset list



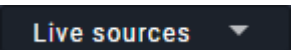

Available options are:



- Playoutdata - central ingest storage, for example, S3 (displayed name can be customized, usually named "Playoutdata")
- Local\_Playout\_Storage / Main / Backup - local playout node storage (name can be customized, usually named "Local\_Playout\_Storage" or "Main" or "Backup", depending on whether it is a redundant or non-redundant system)

**Notice:** *If the local playout storage is selected, the **Aging Date** is displayed as an additional column in the media asset list. This displays the time when a corresponding file is automatically deleted from the local playout node storage (if the file is no longer used in the rundown) by the [housekeeping](#). It is used to prevent the local storage of the playout node from filling up.*

**Notice:** *The status of file transfers from the central storage to the local storage of the playout nodes can be seen from the colored bar on the right-hand side of the **Media Title** column of the corresponding file. The colors correspond to the following statuses:*


-  Green - Transfer to playout node(s) successful
-  Yellow - Transfer to playout node(s) in progress
-  Red - Transfer to playout node(s) failed

Icon/Element	Name	Description
	Title filter	Search media assets of the currently selected type (Live, Placeholder, Secondary Events, or Clips) based on their <b>Title</b> or <b>Media ID</b>
	Title filter folder toggle	Search for the term entered in the title filter either only in the currently selected folder (default, if the toggle is set to <b>Folder</b> ) or in all available folders (if the toggle is set to <b>All</b> ) (only available if asset type <b>Clips</b> is selected)
	Live source filter	Filter the available live sources based on their type (only available if asset type <b>Live</b> is selected)  Available options are: <ul style="list-style-type: none"> <li>• All (all available live sources)</li> <li>• Backchannel (returned playout channel outputs)</li> <li>• Live sources (live signal feeds - compressed signals/SRT live sources are highlighted with a red thumbnail, SDI live sources are highlighted with a green thumbnail)</li> <li>• Live sources of the (current) channel</li> </ul>
	Time filter	Filter the displayed media assets based on the date they were imported into the system  Available options are: <ul style="list-style-type: none"> <li>• All (default, no time filter applied)</li> <li>• Today</li> <li>• Yesterday</li> <li>• Last week</li> <li>• Last month</li> </ul>

Icon/Element	Name	Description
	View switch	Switch between table view (enabled by default) and grid view  <b>Notice:</b> The view switch is only available in the <a href="#">view modes</a> "default" and "simple". It is not available in the "rundown-centric view".
	Reload assets	Refresh the media asset list


If you select a media asset, different columns and metadata are displayed in the list, depending on the selected type.

#### Tip

Some of the columns in the list are sortable. You can sort a column, by clicking the **Sort** icon  to the right of the corresponding column title.

#### Tip

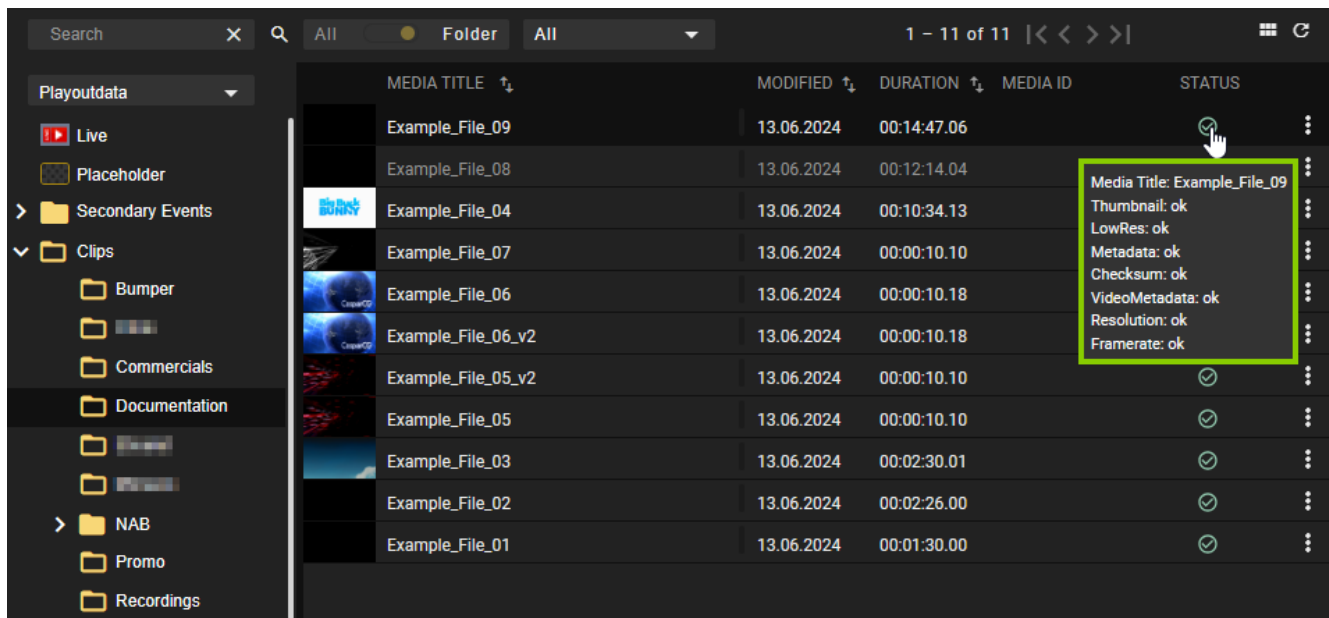
The thumbnail image to the left of the **Event Title** column is marked with **CC** if subtitles were uploaded for the selected file. If you preview such a file, you can select the subtitle language to be used or enable/disable the subtitle display, by clicking the **CC** icon in the preview player and selecting the corresponding option.

Trimmed media assets are recognizable by a thumbnail image marked with a scissor icon . For more information about trimming, see section [Creating trimmed media and adding it to the rundown](#).

The **Status** column provides an aggregation of several statuses for each file, that includes checks of thumbnail, proxy file, metadata, checksum, video metadata, resolution, and framerate. It either displays a green checkmark or a red warning sign, depending on whether all checks were successful or if there was an error.

**Tip: Displaying a detailed status list**

You can display a detailed status list, by hovering your mouse over the displayed **Status** icon.



Automation - Detailed media asset status

The following actions are available via the **Options** menu  on the right side of each row in the list:

Action	Purpose
Preview asset	<p>Open the selected asset in the preview player (available for media items of type live, placeholder, and clip)</p> <p><b>Tip:</b> Placeholders cannot be played back because they are virtual assets. Opening a placeholder in the preview player displays the metadata of the corresponding asset. This enables you, for example, to copy the <b>Title</b> or <b>Media ID</b> of the selected placeholder asset to the clipboard and paste it into the search field above the rundown. This way you can find all occurrences of the asset in the rundown.</p> <p><b>Tip:</b> If you hover your mouse over the <b>Path</b> metadata item, the full file path is displayed which indicates where the corresponding file is expected.</p>
Delete placeholder	Delete the selected asset (only available for media items of type placeholder)

Action	Purpose
Re-process asset	<p>Trigger a full <a href="#">file processing</a> again for the selected file (only available for media items of type clip) and afterward, trigger <a href="#">file transfer</a> from ingest storage to playout nodes again</p> <p><b>Tip:</b> This can be useful if there is a problem with a file (for example, proxy file does not exist) which is indicated by a red warning sign in the <b>Status</b> column.</p>
Re-process thumb	<p>Trigger the <a href="#">file processing</a> again only for the thumbnail image of the selected file (only available for media items of type clip)</p>
Upload asset	<p>Trigger <a href="#">file transfer</a> from central ingest storage to local playout node storage (only available for media items of type clip)</p> <p><b>Notice:</b> The transfer is only executed if a file change is detected on the central storage that deviates from the file on the local storage (based on the <a href="#">file checksum</a>).</p>
Request media	<p>Request initial or renewed transfer of the corresponding file from a connected MAM to the ingest storage (only available for media items of type placeholder when the system is connected to an external MAM)</p> <p><b>Notice:</b> This function can also be triggered via the <b>Missing assets</b> menu as described in section <a href="#">Searching for and requesting missing media</a>.</p>

If the [rundown-centric view](#) is enabled, the **Media** tab is minimized on the right side.

The screenshot displays the 'Automation - Media' tab in a 'rundown-centric view'. The main area is a table of media items:

START TIME	END TIME	LINK	EVENT TITLE	MEDIA ID	SOM	DURATION	MEDIA LENGTH	STATUS M	STATUS B	SECONDARIES	FLAGS
Loop			Berlin Thunder Team Only Highlights (de)			00:02:10	00:06:14.02	OnAir	OnAir		
Loop			Hamburg Sea Devils Team Only Highlights (de)			00:05:31.14	00:05:31.14	Cue	Cue		
Loop			BP-000000272			00:00:05.24	00:00:05.24	Ready	Ready		
Loop			08_SIG_HIGHLIGHTS_Trim			00:00:02.11	00:00:07.14	Ready	Ready		
Loop			BP-000000272			00:00:05.24	00:00:05.24	Ready	Ready		
Loop			Makalu_Demo_03			00:00:05.06	00:00:05.06	Ready	Ready		
Loop			Makalu_Demo_08			00:02:14.12	00:02:14.12	Ready	Ready		
Loop			Break-Block1			00:03:40.03	00:03:40.03	Ready	Ready		
Loop			Break-Block1			00:02:30.00	00:02:30.00	Placeholder	Placeholder		
Loop			BREAK-BLOCK1	BREAK-BLOCK1		00:02:30.00	00:02:30.00	Placeholder	Placeholder		
Loop			Makalu_Demo_02			00:00:42.13	00:00:42.13	Ready	Ready		
Loop			Break-Block2			00:03:32.01	00:03:32.01	Ready	Ready		
Loop			S039415E001R01			00:00:04.00	00:00:04.00	Ready	Ready		
Loop			Makalu_Demo_03			00:00:05.06	00:00:05.06	Ready	Ready		
Loop			BP-000000273			00:00:05.24	00:00:05.24	Ready	Ready		
Loop			Makalu_Demo_03			00:00:05.06	00:00:05.06	Ready	Ready		
Loop			Recording Test 3 Crash Record			00:01:40.23	00:01:40.23	Ready	Ready		
Loop			Recording Test 3 Crash Record			00:00:30.00	00:00:30.00	Ready	Ready		
Loop			Recording Test 3 Crash Record			00:50:35.11	00:50:35.11	Ready	Ready		
Loop			BP-000000332			00:00:02.24	00:00:02.24	Ready	Ready		
Loop			BP-000000328			00:00:02.24	00:00:02.24	Ready	Ready		
Loop			BP-000000332			00:00:02.24	00:00:02.24	Ready	Ready		
Loop			CN-000001781			00:00:11.00	00:00:11.00	Ready	Ready		

At the bottom of the interface, there are control buttons: CUE PREV, TAKE NEXT, CUE NEXT, and SYNC. A message at the bottom right states: 'Drop playlists to import into the rundown' and 'the next available time slot is 05.04.2024 11:35:42.09'.

Automation - Media tab in rundown-centric view

In this display variant, the media information displayed is reduced to a minimum and the preview player provides basic preview functionality. Media type and folders can be selected via corresponding dropdown menus. Media items can be added to the rundown in the same way as in the default or simple view mode (for more information, see section [Adding media to the rundown](#)). The same applies to replacing a clip in the rundown with another media item (for more information, see section [Replacing a clip with another media item](#)).









## PLAYLIST

	TITLE	REV	SCHEDULED TIME	FIXED DURATION	CREATED	SCHEDCHANNEL
-	Docs Example Playlist	1	03.04.2024 15:00:00.00	00:42:32.18	05.04.2024 11:53:56	<input type="checkbox"/>
-	Docs Example Show 1		03.04.2024 15:00:00.00	00:17:10.24	05.04.2024 11:53:56	
	Example_File_01	00.00.0000	00:00:00.00	00:01:30.00	05.04.2024 11:53:56	
	Example_File_02	00.00.0000	00:00:00.00	00:02:26.00	05.04.2024 11:53:56	
	Example_File_03	00.00.0000	00:00:00.00	00:02:30.01	05.04.2024 11:53:56	
	Example_File_04	00.00.0000	00:00:00.00	00:10:34.13	05.04.2024 11:53:56	
	Example_File_05	00.00.0000	00:00:00.00	00:00:10.10	05.04.2024 11:53:56	
+	Docs Example Show 2		03.04.2024 15:10:22.01	00:10:34.13	05.04.2024 11:53:56	
+	Docs Example Show 3		03.04.2024 15:20:56.14	00:14:47.06	05.04.2024 11:53:56	
+		1	19.01.2024 00:00:00.00	00:04:32.22	23.01.2024 13:52:49	<input type="checkbox"/>
+		1	19.12.2023 00:00:00.00	01:55:00.00	19.12.2023 11:27:37	<input type="checkbox"/>
+		1	18.12.2023 12:00:00.00	01:19:45.23	25.03.2024 14:40:10	<input type="checkbox"/>
+		1	07.12.2023 12:00:00.00	01:09:40.00	07.12.2023 11:26:06	<input type="checkbox"/>
+		1	02.12.2023 10:00:00.00	06:49:05.01	01.12.2023 10:21:06	<input type="checkbox"/>
+		1	23.11.2023 12:00:00.00	02:20:06.19	23.11.2023 16:10:48	<input type="checkbox"/>
+		1	18.11.2023 00:00:00.00	01:53:54.16	17.11.2023 16:41:55	<input type="checkbox"/>
+		3	10.11.2023 00:00:00.00	02:18:30.23	09.01.2024 15:40:39	<input type="checkbox"/>
+			01.11.2023 18:00:00.00	00:33:10.00	01.11.2023 09:05:54	<input type="checkbox"/>
+		1	26.09.2023 18:00:00.00	01:30:00.00	26.09.2023 15:43:11	<input type="checkbox"/>
+		1	10.09.2023 04:00:01.00	07:26:10.19	07.09.2023 16:59:16	<input type="checkbox"/>
+		1	08.09.2023 00:00:00.00	28:34:56.04	10.10.2023 14:59:46	<input type="checkbox"/>
+		2	07.09.2023 04:00:00.00	07:26:10.19	07.09.2023 17:03:37	<input type="checkbox"/>
+		1	30.08.2023 00:00:00.00	06:49:05.01	30.08.2023 15:22:15	<input type="checkbox"/>
+		1	28.08.2023 15:00:00.00	01:43:18.10	28.08.2023 14:58:09	<input type="checkbox"/>
+			15.03.2023 00:00:00.00	00:12:51.19	31.03.2023 14:14:50	<input type="checkbox"/>
+		1	18.01.2023 19:00:00.00	00:03:17.23	22.03.2024 06:18:54	<input type="checkbox"/>







*Automation - Playlist*

The **Playlist** tab contains all available playlists of the current channel. Each playlist can be expanded to list all included components (shows, clips, secondary events, and metadata). See section [Schedule](#) for information about how to create playlists.


The toolbar at the top contains the following elements:

Element/Icon	Description
	Search a playlist by title
	Number of playlists to display
	<p>Filter the displayed playlists based on their scheduled airtime</p> <p>Available options:</p> <ul style="list-style-type: none"> <li>• Today</li> <li>• Tomorrow</li> <li>• Next 7 days</li> <li>• Next 14 days</li> <li>• Next 30 days</li> <li>• Past (default)</li> <li>• All</li> </ul>
	<p>Add the selected playlist to the rundown</p> <p>The position/time where the playlist is added to the rundown depends on the following:</p> <ul style="list-style-type: none"> <li>• if the playlist does not have a fixed start time, it is appended to the rundown as the last element (directly after the previous last playlist, without creating gaps)</li> <li>• if the playlist does have a fixed start time but you leave the <b>Sched</b> checkbox unchecked, it is appended to the rundown as the last element (directly after the previously last playlist, without creating gaps) ignoring the fixed start time</li> <li>• if the playlist does have a fixed start time and you activate the <b>Sched</b> checkbox, it is appended to the rundown corresponding to the fixed start time (creating a gap if the start time is not set directly after the end of the previous playlist)</li> </ul>
	Delete the selected playlist
	Reload the list of available playlists

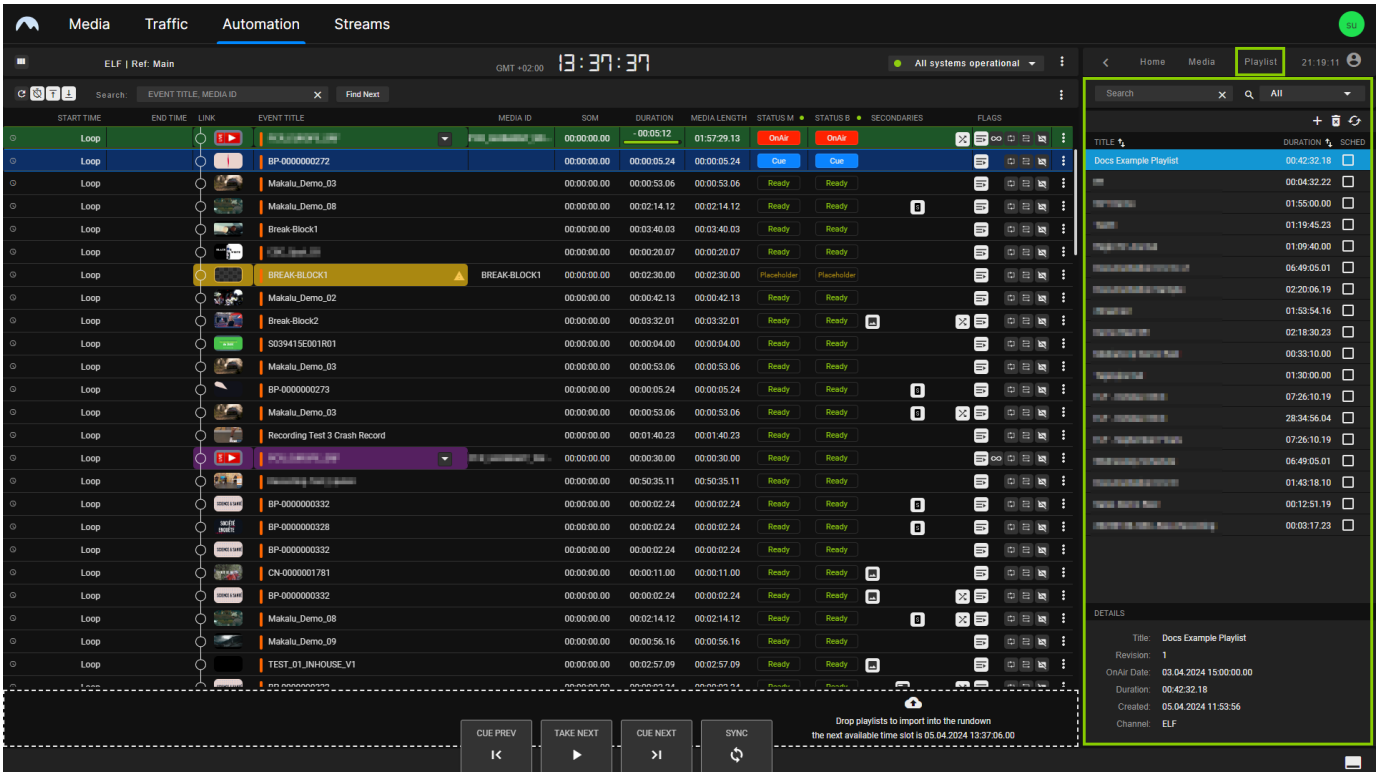
The list of playlists includes the following information:

Column	Description
	Expand the playlist to display a list of included shows, and expand further to display a list of clips included in a show
 / 	Icon of the corresponding type of rundown element (playlist, show) or thumbnail in case of a clip
Title	Playlist title
Rev	<p>Playlist revision</p> <p>Depending on whether a playlist is used in the rundown, the revision number is highlighted as follows:</p> <ul style="list-style-type: none"> <li>•  Not highlighted - the playlist is not used in the rundown</li> <li>•  Highlighted with gray background color - the latest version of the playlist is used in the rundown, no update is available</li> <li>•  Highlighted with yellow background color - an older version of the playlist is used in the rundown, but can be updated to the latest version</li> </ul> <p><i>Tip: You can jump/scroll to the corresponding playlist in the rundown, by clicking the highlighted revision number.</i></p>
Scheduled time	Planned start time of the playlist
Fixed	Displays a clock icon if the playlist has a fixed start time
Duration	Playlist duration
Created	Playlist creation date and time
Sched	If enabled, the playlist can be added to the rundown using its planned start time as a fixed time (for more information, see the description of the <a href="#">playlist toolbar</a> )
Channel	Name of the playout channel for which the playlist was created or "Global" if the playlist is not assigned to a playout channel (for example, if the playlist was not created via Makalu Traffic but imported from a connected NRCS (Newsroom Computer System) and no channel is specified)

### Tip

Some of the columns in the list are sortable. You can sort a column, by clicking the **Sort** icon  to the right of the corresponding column title.

If the **rundown-centric view** is enabled, the **Playlist** tab is minimized on the right side.



The screenshot displays the Automation interface in rundown-centric view. The main area shows a list of events with columns for Start Time, End Time, Link, Event Title, Media ID, SOM, Duration, Media Length, Status M, Status B, Secondaries, and Flags. A vertical timeline on the left shows the sequence of events. On the right, the Playlist tab is minimized, showing a search bar and a list of playlist items. Below the list, details for a selected playlist are shown, including Title, Revision, OnAir Date, Duration, Created, and Channel.

*Automation - Playlist tab in rundown-centric view*

In this display variant, the playlist information displayed in the list is reduced to a minimum. Details of a selected playlist are displayed below the list. Playlists can be added to the rundown in the same way as in the default or simple view mode (for more information, see section [Adding a playlist to the rundown](#)). The same applies to updating a playlist (for more information, see section [Updating a playlist](#)). As playlists cannot be expanded when the rundown-centric view is enabled, only entire playlists can be added to the rundown, but not selected individual elements/clips used in a playlist.

## GRAPHICS

*Automation - Singular.Live graphics dashboard*

The **Graphics** tab includes an embedded version of the Singular.Live composition dashboard, allowing you to manually trigger Singular.Live graphics for the current channel directly from within Makalu Automation.

For more information about how to use graphics, see the [Graphics](#) section.

## RECORDINGS

**Notice**

The **Recordings** tab and the corresponding secondary event type listed under **Media > Secondary Events > Recordings** are only available if the optional Makalu Recording module is enabled for the currently selected playout channel. For more information, see section [Recording](#).







*Automation - Recordings*

In the **Recordings** tab, you can record available ([live](#)) sources by using available recording channels. For more information about how to create recordings, see section [Recording](#).

The tab contains the following areas:

1. **Preview** - Preview and controls of the currently selected recording channel
2. **Channel list** - List of available recording channels
3. **Preferences** - Preferences for creating a new recording job for the currently selected encoder
4. **Recordings** - List of existing recording jobs

The **Preview** area (1) provides the following controls and information:

Element	Description
	Prepare a recording
	Start a recording
	Stop a recording
	Split a recording
	Cancel a recording
	Delete a recording job
Current	Current recording duration of the selected recording job
Total	Total recording time of the selected recording job
Next	Time until the next scheduled recording job starts on the selected encoder
Source	Source of the selected recording job
Input	Input format of the selected source
Profile	Profile of the selected recording job
Status	Status of the selected encoder or recording job
Name	Title of the selected recording job

In the **Channel list** area (2) all available recording channels are listed. Depending on their current status, channels are highlighted in one of the following colors:

- Gray - The channel is offline or has no active recording jobs
- Green - A recording job is currently prepared
- Red - A recording job is currently running

By default, only recording channels that are assigned to the currently selected playout channel are displayed in this list. This is recognizable by the switch at the top, which is set to **Channel** by default. Optionally, you can also display all globally available recording channels by setting it to **All**.

**i Notice**

If you select a recording channel from the list, its default settings are displayed to the right in the **Preferences** area (3). All current recording jobs of the currently selected recording channel are listed in the **Recordings** area (4) at the bottom.

Using the **Channel** setting of the switch makes it easy to see which recordings have already been created or which recording secondary events have already been scheduled in the rundown for the currently selected playout channel. It is useful to avoid possible conflicts before creating new recording jobs.

Setting the switch to **All** lists all globally available recording channels. It enables you to perform rundown-independent recordings (e.g. feed ingest), regardless of which playout channel is currently selected in the detailed channel view of the Makalu Automation.

The **Preferences** area (3) provides the following input options:

Name	Description
Title	Title of the recording job
Filename	Name of the file to be recorded  <b>Notice:</b> <i>If no file name is provided, the title is used as the file name.</i>
Folder	Destination folder where to store the recorded file
Source	Source stream to be recorded
Save As Default	Set the currently selected source as default for the currently selected encoder
Profile	Format/recording profile of the file to be recorded
Type	Recording job type, available options: <ul style="list-style-type: none"> <li>• Single shot - to be used for single file recording jobs (after stopping the recording job it cannot be used again)</li> <li>• Multi shot - to be used for multi-file recording jobs (the recording can be stopped; the recording job can be used again to record another file and each time another recording is started, a consecutive number is appended to the file name)</li> </ul>
Split	If enabled, a recorded file can be split either manually via the corresponding control or automatically based on the "Automatic Split" time setting
Automatic Split	Time interval for automatically splitting a recorded file  <b>Notice:</b> <i>This option is only available if "Split" is enabled.</i>



Name	Description
Loop	Enable to enable the retention period field
Retention period	Select a duration (in hours) when a recorded file is automatically deleted
Apply	Create a recording job with the current settings
Schedule	Activate the checkbox to create a scheduled recording job
Start	Start time of the scheduled recording job
End	End time of the scheduled recording job
Add	Create a scheduled recording job with the current settings
Duration	Duration of the scheduled recording job  <b>Notice:</b> The duration is only available if "Schedule" and the toggle switch next to "End" are enabled.
Open end	Activate the checkbox to create a scheduled recording job without specifying an end time  <b>Notice:</b> In this case, the recording job must be stopped manually.

The **Recordings** list (4) contains all current recording jobs of the currently selected recording channel.


The area above the list includes the following controls and information:

- Dropdown menus - Filters for narrowing the list based on the selected job status, type, or channel
- Failed - The number of failed recording jobs
- Completed - The number of completed recording jobs
- Paging - Controls for navigating multiple pages of the list (if applicable)
- Refresh - Refresh the list

The list provides the following information and controls:

Column	Description
Title	Title of the recording job
Channel	Recording channel/encoder used for the recording

Column	Description
Type	Type of the recording job, available options: <ul style="list-style-type: none"> <li>• Event (event-based, scheduled start and stop)</li> <li>• Crash (manual start and stop)</li> <li>• Schedule (scheduled start and stop)</li> </ul> For more information, see section <a href="#">Recording job types</a>
Status	Status of the recording job, available states: <ul style="list-style-type: none"> <li>• Idle</li> <li>• Created</li> <li>• Completed</li> <li>• Error</li> <li>• Prepared</li> <li>• Preparing</li> <li>• Queued</li> <li>• Running</li> <li>• Started</li> <li>• Starting</li> <li>• Stopped</li> <li>• Stopping</li> <li>• Canceled</li> </ul>
Start time	Scheduled start time of the recording job <p><b>Notice:</b> <i>In the case of an event-based recording job, the scheduled start time of the corresponding primary event in the rundown is displayed by default.</i></p>
Duration	Scheduled duration of the recording job <p><b>Notice:</b> <i>In the case of an event-based recording job, the scheduled duration of the corresponding primary event in the rundown is displayed by default.</i></p>

Column	Description
Action	<p>Actions for controlling a recording job, available controls (the same as in the <a href="#">preview area</a>):</p> <ul style="list-style-type: none"> <li>• Prepare recording</li> <li>• Start recording</li> <li>• Stop recording</li> <li>• Split recording</li> <li>• Cancel recording</li> <li>• Delete recording job</li> </ul> <p>The <b>Options</b> menu  provides the following additional actions:</p> <ul style="list-style-type: none"> <li>• Job info - Display detailed information about the recording job</li> <li>• Delete job - Delete the recording job</li> </ul>

#### TRANSFER

In the **Transfer** tab, all file transfers from the central ingest storage to playout nodes are listed, that are currently running or were recently finished. It also provides an overview of file processing jobs.

MEDIA TITLE	MEDIA ID	TARGET FOLDER	UPLOADED	STATUS	ACTION
Example_File_01		Clips/Documentation	05.04.2024 14:19:49	Completed 100% 102.43 MB   102.43 MB	⌂ ↻
Example_File_02		Clips/Documentation	05.04.2024 14:19:45	Completed 100% 176.33 MB   176.33 MB	⌂ ↻
Example_File_03		Clips/Documentation	05.04.2024 14:19:30	Completed 100% 185.39 MB   185.39 MB	⌂ ↻
Example_File_05		Clips/Documentation	05.04.2024 14:19:25	Completed 100% 5.87 MB   5.87 MB	⌂ ↻
Example_File_04		Clips/Documentation	05.04.2024 14:19:25	Completed 100% 808.68 MB   808.68 MB	⌂ ↻
Example_File_09		Clips/Documentation	05.04.2024 14:19:23	Completed 100% 1.06 GB   1.06 GB	⌂ ↻


  



MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		▲
Example_File_06	03.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - File transfer list

For redundant channels, two tabs at the top left of this area enable you to select either the **Main** or **Backup** playout node (for non-redundant channels, only one tab is displayed for the main channel). Depending on your selection, the corresponding file transfers are displayed. The number in brackets beside the playout node name indicates how many file transfers to this node are currently running. The columns of the list provide details about each file and the transfer progress.

The action column provides the following elements:

Icon/Element	Description
	Pause file transfer

Icon/Element	Description
	Cancel file transfer
	Retry/re-trigger file transfer

Below the transfer list, in the **Disk space** area the available storage space of the selected playout node is displayed.

For information about how to trigger a file transfer manually, see section [File transfer](#).

The **File processing** tab at the top left of this area displays a list of file processing jobs, that are currently running or were recently finished. When a file is uploaded to the central ingest storage, a corresponding file processing job is automatically created and added to the list.

Running jobs: 0    Queue jobs: 0    Failed jobs: 5

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example Recording	05.04.2024 14:10:46	05.04.2024 14:13:20	✓	↺ ⏪ ⏩ ↻
Clips/Documentation/Example Recording.mp4	05.04.2024 14:02:39	05.04.2024 14:04:25	✓	↺ ⏪ ⏩ ↻
Example_File_09	03.04.2024 11:47:26	03.04.2024 11:53:09	✓	↺ ⏪ ⏩ ↻
Example_File_08	03.04.2024 11:43:50	03.04.2024 11:47:26	✓	↺ ⏪ ⏩ ↻
Example_File_04	03.04.2024 11:42:02	03.04.2024 11:45:52	✓	↺ ⏪ ⏩ ↻
Clips/Documentation/Example_File_06_v2.mp4	03.04.2024 11:42:03	03.04.2024 11:43:50	⚠	↺ ⏪ ⏩ ↻
Example_File_07	03.04.2024 11:39:52	03.04.2024 11:42:06	⚠	↺ ⏪ ⏩ ↻
Clips/Documentation/Example_File_05_v2.mp4	03.04.2024 11:36:42	03.04.2024 11:42:02	✓	↺ ⏪ ⏩ ↻
Example_File_03	03.04.2024 11:35:54	03.04.2024 11:42:02	✓	↺ ⏪ ⏩ ↻




MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		⚠
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		⚠
Example_File_06	03.04.2024	00:00:10.18		⚠
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - File processing list

Via the dropdown menu above the file processing list, you can filter the list based on the job status (created, completed, failed, and/or running). Right beside the dropdown menu, there is an options menu with additional display options for the file processing list. The columns of the list provide details about each file processing job.

During file processing, a progress bar is displayed for each job, showing the current processing phase (download, pre-processing, processing, or post-processing).

A file processing job can have one of the following statuses:




Icon	Description
	Processing successfully completed
	Processing is currently in progress
	Error during processing

### Tip

You can display additional status details, by hovering your mouse over the corresponding status icon.

If a file processing job is currently in progress or has ended with an error, the corresponding status icon is also displayed to the right of the name of the **Transfer** tab.

The action column provides the following elements:

Icon/Element	Description
	Restart complete file processing
	Cancel file processing
	Restart file processing for selected files (available options: checksum, low-res proxy, and/or thumbnail)

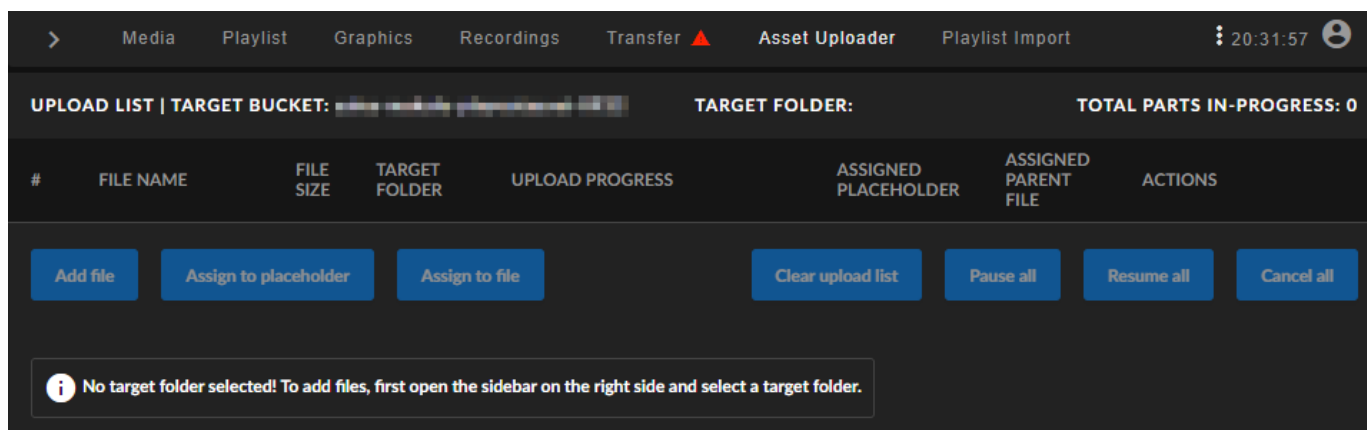
Below the file processing list, additional statistics are displayed (running jobs, queued jobs, and failed jobs).

For information about how to trigger a file processing manually, see section [File processing](#).

At the bottom of the **Transfer** tab, the media asset list is displayed. This is the same list with the same functionality as in the [Media](#) tab.

#### ASSET UPLOADER

The **Asset Uploader** tab integrates the functionality of the Asset Uploader into the Makalu Automation UI.



Automation - Asset Uploader

For information about how to use the Asset Uploader see section [Ingest](#).

#### PLAYLIST IMPORT

The **Playlist Import** tab enables you to import XML-based playlists created by Makalu or by third-party traffic systems.

<input type="checkbox"/>	Title	Missing Files	Revision	Channel	Process	Import
<input type="checkbox"/>	20230130_SSC...	1	+	1	100% Ready for import	Import
<input type="checkbox"/>	20230322_MC...	2	+	4	100% Ready for import	Import
<input type="checkbox"/>	20230223_NA...	2	+	4	100% Ready for import	Import
<input type="checkbox"/>	20230322_MC...	2	+	3	100% Ready for import	Import
<input type="checkbox"/>	20230223_NA...	2	+	3	100% Ready for import	Import
<input type="checkbox"/>	20230223_NA...	2	+	2	100% Ready for import	Import

Drop or [select](#) Playlists to import them

#### Automation - Playlist import

The list of imported playlists provides the following information:

Column	Description
Title	Name/title of the playlist



Column	Description
Missing Files	<p>Number of files missing on the ingest storage</p> <p><b>Notice:</b> For each imported playlist, a missing file list is created. This list includes all files that are used in the imported playlist but are not yet available on the ingest storage. For each of these files, a placeholder asset is automatically created, so that the playlist can already be used in a rundown.</p> <p><b>Notice:</b> Missing file lists can also be exported. For more information, see section <a href="#">Exporting a missing file list</a>.</p>
Revision	<p>Playlist revision number (each time a playlist with the same name/title is imported, the revision number is increased)</p>
Channel	<p>Target channel</p>
Process	<p>Progress/status of the playlist processing/import</p>
Import	<p>Start the playlist import</p>

For more information, see section [Importing a playlist](#).

## Adding elements to the rundown

### ADDING A PLAYLIST TO THE RUNDOWN

To add a playlist to the rundown, proceed as follows:

1. On the right side, select the **Playlist** tab.

*All available playlists for the current channel are listed.*

The screenshot shows the Automation interface with the Playlist tab selected. The main area displays a rundown of events, and the right panel shows a list of available playlists.

TITLE	REV	SCHEDULED TIME	FIXED DURATION	CREATED	SCHED CHANNEL
Docs Example Playlist	2	06.04.2024 15:00:00.00	00:42:32.18	05.04.2024 15:12:06	ELF
...	1	19.01.2023 00:00:00.00	00:04:32.22	23.01.2023 11:52:49	ELF
...	1	19.12.2023 00:00:00.00	01:55:00.00	19.12.2023 11:27:37	ELF
...	1	18.12.2023 12:00:00.00	01:19:45.23	25.03.2024 14:40:10	ELF
...	1	07.12.2023 12:00:00.00	01:09:40.00	07.12.2023 11:26:06	ELF
...	1	02.12.2023 10:00:00.00	06:49:05.01	01.12.2023 10:21:06	ELF
...	1	23.11.2023 12:00:00.00	02:20:06.19	23.11.2023 16:10:48	ELF
...	1	18.11.2023 00:00:00.00	01:53:54.16	17.11.2023 16:41:55	ELF
...	3	10.11.2023 00:00:00.00	02:18:30.23	09.01.2024 15:40:39	ELF
...	1	01.11.2023 18:00:00.00	00:33:10.00	01.11.2023 09:05:54	ELF
...	1	26.09.2023 18:00:00.00	01:30:00.00	26.09.2023 15:43:11	ELF
...	1	10.09.2023 04:00:00.00	07:26:10.19	07.09.2023 16:59:16	ELF
...	1	08.09.2023 00:00:00.00	28:34:56.04	10.10.2023 14:59:46	ELF
...	2	07.09.2023 04:00:00.00	07:26:10.19	07.09.2023 17:03:37	ELF
...	1	30.08.2023 00:00:00.00	06:49:05.01	30.08.2023 15:22:15	ELF
...	1	28.08.2023 15:00:00.00	01:43:18.10	28.08.2023 14:58:09	ELF
...	1	15.03.2023 00:00:00.00	00:12:51.19	31.03.2023 14:14:50	ELF
...	1	18.01.2023 19:00:00.00	00:03:17.23	22.03.2024 06:18:54	ELF

*Automation - Available playlists*

2. To add a playlist to the rundown, you can either:
  - a. Select a playlist by clicking the corresponding row in the **Playlist** tab (the row will be highlighted in blue) and click the **Plus** icon (Add playlist to rundown) at the top right, or
  - b. drag a playlist and drop it on the dashed area at the bottom of the rundown.

The screenshot shows the Automation interface with a rundown table and a playlist table. The rundown table lists various events with their start times, durations, and statuses. The playlist table lists 'Docs Example Playlist' with its scheduled time and duration. A green arrow points from the 'Add Playlist' button in the playlist table to the 'Automation' interface.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
29.03 15:21:52.05		ELF - October 03/4 (1)	173:04:59.23				
	Loop	Berlin Thunder Team On...	00:06:14.02	Ready	Ready		
	Loop	Hamburg Sea Devils Tea...	00:05:31.14	Ready	Ready		
	Loop	BP-0000000272	00:00:05.24	Ready	Ready		
	Loop	08_SIG_HIGHLIGHTS_Trim	00:00:07.14	Ready	Ready		
	Loop	BP-0000000272	01:57:29.13	Ready	Ready		
	Loop	BP-0000000272	00:00:05.24	Ready	Ready		
	Loop	Makalu_Demo_03	-00:00:46	OnAir	OnAir		
	Loop	Makalu_Demo_08	00:02:14.12	On	On		
	Loop	Break-Block1	00:03:40.03	Ready	Ready		
	Loop	Break-Block2	00:00:20.07	Ready	Ready		
	Loop	BREAK-BLOCK1	00:02:30.00	Placeholder	Placeholder		
	Loop	Makalu_Demo_02	00:00:42.13	Ready	Ready		
	Loop	Break-Block2	00:03:32.01	Ready	Ready		
	Loop	S039415E001R01	00:00:04.00	Ready	Ready		
	Loop	Makalu_Demo_03	00:00:53.06	Ready	Ready		
	Loop	BP-0000000273	00:00:05.24	Ready	Ready		
	Loop	Makalu_Demo_03	00:00:53.06	Ready	Ready		

TITLE	REV	SCHEDULED TIME	FIXED	DURATION	CREATED	SCHED CHANNEL
Docs Example Playlist	2	06.04.2024 15:00:00.00		00:42:32.18	06.04.2024 15:12:06	ELF
...	1	19.01.2024 00:00:00.00		00:04:32.22	23.01.2024 13:52:49	ELF
...	1	19.12.2023 00:00:00.00		01:55:00.00	19.12.2023 11:27:37	ELF
...	1	18.12.2023 12:00:00.00		01:19:45.23	25.03.2024 14:40:10	ELF
...	1	07.12.2023 12:00:00.00		01:09:40.00	07.12.2023 11:26:06	ELF
...	1	02.12.2023 10:00:00.00		06:49:05.01	01.12.2023 10:21:06	ELF
...	1	23.11.2023 12:00:00.00		02:20:06.19	23.11.2023 16:10:48	ELF
...	1	18.11.2023 00:00:00.00		01:53:54.16	17.11.2023 16:41:55	ELF
...	3	10.11.2023 00:00:00.00		02:18:30.23	09.01.2024 15:40:39	ELF
...	1	01.11.2023 18:00:00.00		00:33:10.00	01.11.2023 09:05:54	ELF
...	1	26.09.2023 18:00:00.00		01:30:00.00	26.09.2023 15:43:11	ELF
...	1	10.09.2023 04:00:01.00		07:26:10.19	07.09.2023 16:59:16	ELF
...	1	08.09.2023 00:00:00.00		28:34:56.04	10.10.2023 14:59:46	ELF
...	2	07.09.2023 04:00:00.00		07:26:10.19	07.09.2023 17:03:37	ELF
...	1	30.08.2023 00:00:00.00		06:49:05.01	30.08.2023 15:22:15	ELF
...	1	28.08.2023 15:00:00.00		01:43:18.10	28.08.2023 14:58:09	ELF
...	1	15.03.2023 00:00:00.00		00:12:51.19	31.03.2023 14:14:50	ELF
...	1	18.01.2023 19:00:00.00		00:03:17.23	22.03.2024 06:18:54	ELF

Automation - Add a playlist to the rundown

**Notice**

If the rundown is currently empty, a dialog is displayed that asks you to select a start time for the playlist. Select the start time and click **Apply** to confirm.



The playlist is added to the rundown.

**Notice**

If you selected a start time, the playlist is added based on your selected start time. Otherwise, if the rundown previously already included playlists and you did not select a specific start time, the new playlist is added as the last element and the start time is dynamically calculated without creating gaps.

**Notice**

Depending on the playlist size, adding a large playlist to the rundown can take a few seconds. While a playlist is being added to the rundown, the add function is locked. Another playlist can only be added once the current adding process has been completed.

- (Optional) To display shows in the rundown, click the **Options** icon  above the rundown and select **Display shows**. To expand a show included in the added playlist, click the corresponding **Expand** icon  in the link column.

The show is expanded, and all included clips are listed.

Automation - Playlist added to the rundown

### Tip

To add a playlist to the rundown at a specified start date/time, activate the checkbox in the **Sched** column (short for "scheduled") before you drag the playlist onto the **Dropzone** area or click the **Add playlist to rundown** button.

If the playlist already has a specified start time, this will be applied. If the playlist has no specified start date/time, a dialog is displayed that asks you to select the start time.

### Notice

You cannot add a playlist with a specific scheduled start date/time to the rundown if there is already a playlist in the rundown scheduled for the same date/time.

### Notice

Playlists with a fixed start date/time can only be added to the rundown if the start date/time is in the future.

### Notice

If the added playlist includes files that are not available on the playout nodes of the channel, file transfers are automatically started. As a result, all corresponding files are copied from the ingest storage to all playout nodes that are assigned to the channel. See section [File transfer](#) for more information.

## ADDING A PLAYLIST ITEM TO THE RUNDOWN

In addition to [adding an entire playlist to the rundown](#), you can also add one or more individual playlist items from another playlist to the rundown via the **Playlist** tab.

To add one or more items from another playlist to the rundown, proceed as follows:

1. On the right side select the **Playlist** tab.

*All available playlists are listed.*

The screenshot displays the 'Automation - Playlist' tab. The main interface is divided into several sections:

- Top Bar:** Shows 'Media', 'Traffic', 'Automation', and 'Streams' tabs. The 'Automation' tab is active. It also displays 'ELF | Ref: Main', 'GMT +02:00', '13:56:23', and 'All systems operational'.
- Left Panel:** Contains a video preview window showing a studio scene, a 'Remaining Event' timer (00:02:08.11), a 'Next Live' timer (00:16:30.13), and a 'Next Missing' timer (00:06:08.03). Below this is a search bar and a 'Find Next' button.
- Main Rundown Table:** A table listing events with columns: START TIME, LINK, EVENT TITLE, DURATION, STATUS M, STATUS B, SECONDARIES, and FLAGS. The table shows various events like '06\_SIG\_HALF TIME', 'Berlin Thunder Team On...', and 'Example\_File\_01' through '04'.
- Right Panel (Playlist Tab):** A detailed view of a playlist with columns: TITLE, REV, SCHEDULED TIME, FIXED, DURATION, CREATED, and SCHED CHANNEL. It lists items like 'Docs Example Playlist', 'Example\_File\_01', and 'Example\_File\_02'.
- Bottom Bar:** Features control buttons: 'CUE PREV', 'TAKE NEXT', 'CUE NEXT', and 'SYNC'. A message at the bottom reads: 'Drop playlists to import into the rundown the next available time slot is 08.04.2024 20:50:01.08'.

*Automation - Playlist tab*

2. Expand a playlist, by clicking the corresponding **Plus** icon.

*All shows included in the playlist are listed.*

3. Expand a show, by clicking the corresponding **Plus** icon.

*All clips included in the show are listed.*

The screenshot displays the Automation interface. On the left, a 'Run Down' list shows various clips with columns for Start Time, Link, Event Title, Duration, Status M, Status B, and Secondary. A 'Docs Example Playlist' is highlighted, containing clips like 'Example\_File\_01' through 'Example\_File\_05'. On the right, a detailed view of the 'Docs Example Playlist' is shown, listing individual clips with their scheduled times, fixed durations, and creation dates. A green box highlights the 'Docs Example Show 1' section, which includes 'Example\_File\_01' through 'Example\_File\_05'. At the bottom, there are control buttons for 'CUE PREV', 'TAKE NEXT', 'CUE NEXT', and 'SYNC', along with a message: 'Drop playlists to import into the rundown the next available time slot is 08.04.2024 20:50:01.08'.

Automation - List of clips

4. Select one or more clips to be added to the rundown.

#### Tip



You can select multiple individual clips from one or more playlists, by holding **[Ctrl]**. To select multiple consecutive clips from a playlist, hold **[Shift]**.

5. Drag the selected clip(s) to the desired position in the rundown.

The screenshot displays the 'Automation' tab in the software interface. The top navigation bar includes 'Media', 'Traffic', 'Automation', and 'Streams'. The central area shows a video player and event controls for 'Makalu\_Demo\_08'. The left sidebar contains a search bar and a list of events with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The right sidebar shows a playlist table with columns for 'TITLE', 'REV', 'SCHEDULED TIME', 'FIXED DURATION', 'CREATED', and 'SCHED CHANNEL'. A green arrow points from a playlist item in the right sidebar to its corresponding entry in the main event list.

Add playlist items to the rundown via drag and drop

### Tip

To find and select a specific playlist as a target for adding the new playlist items, you can jump between the playlists in the rundown, by using the **Next playlist** icon  and **Previous playlist** icon  on the left side above the rundown.

### Tip

To add the new items at the end of a show or playlist, drag them onto the corresponding show or playlist in the rundown. To insert the new items at a specific position in the rundown (before a specific clip within the clip order), drag them onto the corresponding clip.

### Notice

If secondary events are assigned to the selected playlist items, they are retained when the playlist items are added to the rundown. If default secondary events are configured for the corresponding Makalu channel, they are also added automatically when the playlist items are added to the rundown.

The selected playlist items are added to the rundown.


The screenshot displays the Media Automation interface. At the top, there are tabs for 'Media', 'Traffic', 'Automation', and 'Streams'. The central area shows a video player with a 'Remaining Event' of 00:00:36.23 and a 'Remaining Show' of 01:18:38.00. Below this is a table of events with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The right-hand side features a 'Media' panel with a search bar and a list of media assets, including 'Docs Example Playlist', 'Secondary Events', and various 'Example\_File' entries. The interface is dark-themed and includes various control icons and status indicators.

Automation - Updated playlist

#### ADDING MEDIA TO THE RUNDOWN

In addition to playlists, you can also add media assets (video files, secondary events, live sources, or placeholders) to the rundown, by adding them to a show in a playlist.

To do this, proceed as follows:

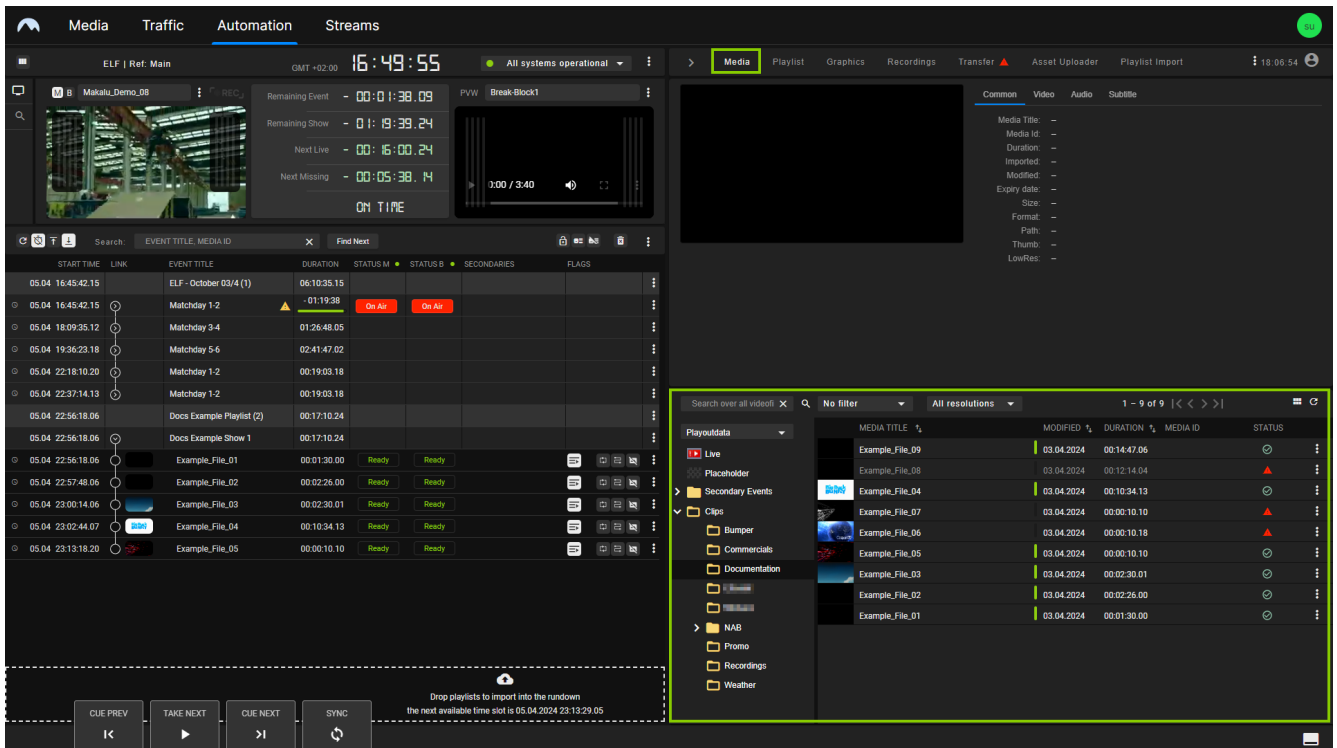
1. (Optional) To expand a show, click the corresponding **Expand** icon  in the link column.

*The show is expanded, and all included clips are listed.*

2. On the right side, select the **Media** tab.

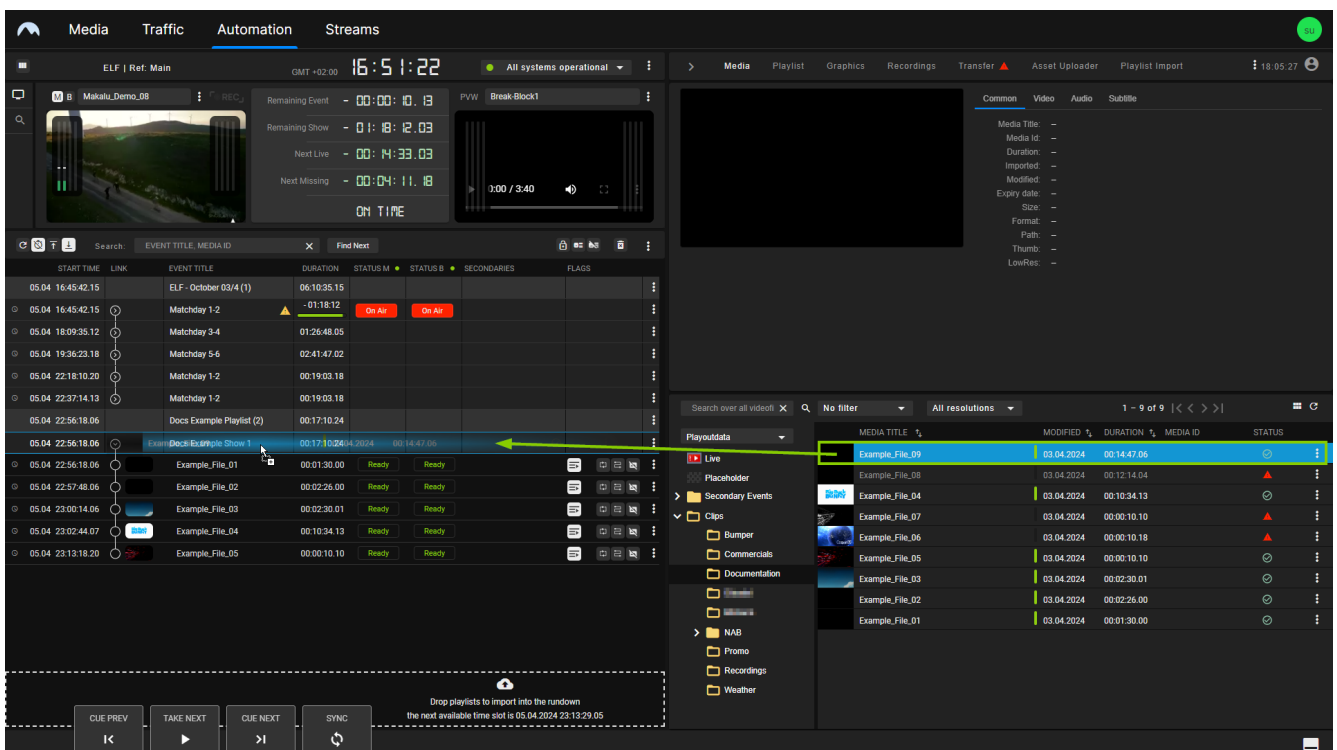
*All available media assets are listed in the media list.*





Automation - Show expanded and media tab opened

3. Select one or more media assets (video files, live sources, or placeholders) from the media list on the right side and add them to a show in the rundown on the left side via drag and drop.



Automation - Add media assets to a show

### Notice

If you want to add a video file media asset to the rundown, its resolution and framerate should usually match the channel output properties exactly. For example, if you use a channel that is configured for 1080p and 25 fps output, you should use files with a resolution of 1920 x 1080 px and a framerate of 25 fps.

Video files with properties that differ from the current channel output configuration are displayed with a gray font color in the media list and a red warning icon in the **Status** column. When you hover your mouse over this icon, additional status details are displayed, including information about resolution and framerate. In this case, one or both of these display properties are displayed as incorrect.

The screenshot shows a video management interface with a media list. The list has columns for MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS. The STATUS column for 'Example\_File\_08' shows a red warning icon. A dropdown menu is open for this row, listing various metadata fields. The 'Resolution' field is highlighted in red and labeled as 'incorrect', while 'Framerate' is labeled as 'ok'.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		⚠
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		✓
Example_File_06	03.04.2024	00:00:10.18		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

Dropdown menu for Example\_File\_08:

- Media Title: Example\_File\_08
- Thumbnail: ok
- Proxy: ok
- Metadata: ok
- Checksum: ok
- VideoMetadata: ok
- Resolution: incorrect
- Framerate: ok

*Automation - Video files with resolutions and framerates that do not match the channel output properties*

By default, you cannot add video files that use other resolutions and/or framerates than the current channel output configuration.

*The selected video file, live source, or placeholder is added to the rundown as the last clip of the selected show.*

The screenshot displays the 'Automation' tab of a video management system. At the top, there are navigation tabs for 'Media', 'Traffic', 'Automation', and 'Streams'. The main interface is divided into several sections:

- Top Left:** A video player showing a scene with a person in a green environment. Below it, a search bar and a table of events.
- Top Right:** A 'Remaining Event' and 'Remaining Show' timer, and a 'Next Live' and 'Next Missing' timer. A 'PVW Break-Block1' indicator is also present.
- Middle:** A large table listing events with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The row for 'Example\_File\_09' at 05:04 23:17:09.17 is highlighted in green.
- Right Side:** A 'Media' panel with a search bar and a list of media items. The 'Example\_File\_09' is selected and highlighted in blue.
- Bottom:** A control bar with buttons for 'CUE PREV', 'TAKE NEXT', 'CUE NEXT', and 'SYNC'. A message at the bottom reads: 'Drop playlists to import into the rundown the next available time slot is 05:04:2024 23:31:56.23'.

Automation - Video files added to a show

### Tip

Instead of adding a clip at the end of a show, you can also replace an individual clip in a show by dragging and dropping one or more new media items directly on the clip to be replaced while holding **[Ctrl]**. For more information, see sections [Replacing a clip with another media item](#) and [Replacing a clip with another playlist item](#).

To add a new clip before an existing clip in a show, drag and drop the new clip on an existing clip (without holding **[Ctrl]**).

### Notice

If the added file is not available on the playout nodes of the channel, file transfers are automatically started. As a result, the corresponding file is copied from the ingest storage to all playout nodes that are assigned to the channel. See section [File transfer](#) for more information.

- (Optional) [Change the show's clip list order](#) to move the added clip to a specific position within the selected show.

## CREATING TRIMMED MEDIA AND ADDING IT TO THE RUNDOWN

If you only want to add a specific subsection of a media asset (video file) to the rundown, you can trim it in the following ways:

- temporary (for one-time usage), or
- permanent (for creating reusable trimmed media assets)

**i Notice**


Trimming a media asset permanently does not create a new file on the ingest or playout storage. It only creates a new media asset that references the original file (using the original file path on the storage) and uses the set mark in and out points.

The basic procedure is identical for both temporary and permanent trimming. Creating a permanently trimmed media asset requires only a few additional steps.

To create a trimmed media asset and add it to the rundown, proceed as follows:

**i Notice**


Trimming is only possible for media assets that represent actual video files. In the media list, these files are usually listed under **Clips** in the folder tree. Live and placeholder media assets cannot be trimmed.

1. In the rundown select and expand the show to which you want to add trimmed media.  
*The show is expanded, and all included clips are listed.*
2. On the right side, select the **Media** tab.  
*All available media items are listed in the media list.*
3. In the media list select the media asset to be trimmed, either by clicking the **Options** icon  at the right side of the corresponding list item and selecting **Preview asset** or by dragging the item on the preview player.

**💡 Tip**

You can also open a media asset in the preview player by dragging it from the media list and dropping it on the preview player.

*The media asset is opened by the preview player.*

4. Use the preview player controls to select the timecode for the mark in.
5. To set the selected timecode as mark in, click the **Set Mark In** icon .


*The Mark In timecode is updated accordingly.*

The screenshot shows a video player interface with the following elements:

- Video Player:** Displays a video titled "Example\_File\_04" with a progress bar at 1:00 / 10:34. The "Mark In" timecode is 00:01:00.14, and the "Mark Out" timecode is 00:10:34.12. The "Set Mark Out" icon is highlighted.
- Metadata Panel:** Shows details for "Example\_File\_04":
  - Media Title: Example\_File\_04
  - Media Id: [blank]
  - Duration: 00:10:34.13
  - Imported: 03.04.2024 11:42:02.20
  - Modified: 03.04.2024 11:43:31.12
  - Expiry date: 03.05.2024 11:42:02.00
  - Size: 808.68 MB
  - Format: MP4
  - Path: Clips/Documentation/Example\_File\_04.mp4
  - Thumb: Clips/Documentation/Thumbnail/Example\_File\_04.png
  - LowRes: Clips/Documentation/Proxy/Example\_File\_04.mp4
- Media Library Table:**

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		▲
Example_File_06	03.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - Trimmed media - Mark in set

- Use the preview player controls to select the timecode for the mark out.
- To set the selected timecode as mark out, click the **Set Mark Out** icon .

The Mark Out timecode is updated accordingly.

The screenshot displays a video management interface. At the top, there are navigation tabs: Media, Playlist, Graphics, Recordings, Transfer (with a red triangle), Asset Uploader, and Playlist Import. The current time is 17:48:15.

The main area is divided into two sections. On the left is a video player showing a scene with a blue sky and green foliage. The video is at 7:20 / 10:34. Below the player is a control bar with various icons, including a green box around a right-pointing arrow icon. Below the control bar, the media title is 'Example\_File\_04'. The position is 00:07:20.17 and the remaining time is 00:03:13.21. The mark in is 00:01:00.14 and the mark out is 00:07:20.16. The duration is 00:06:20.03. There are also icons for a link and a refresh.

On the right is a metadata panel with tabs for Common, Video, Audio, and Subtitle. The 'Common' tab is active, showing the following information:

- Media Title: Example\_File\_04
- Media Id:
- Duration: 00:10:34.13
- Imported: 03.04.2024 11:42:02.20
- Modified: 03.04.2024 11:43:31.12
- Expiry date: 03.05.2024 11:42:02.00
- Size: 808.68 MB
- Format: MP4
- Path: Clips/Documentation/Example\_File\_04.mp4
- Thumb: Clips/Documentation/Thumbnail/Example\_File\_04.png
- LowRes: Clips/Documentation/Proxy/Example\_File\_04.mp4

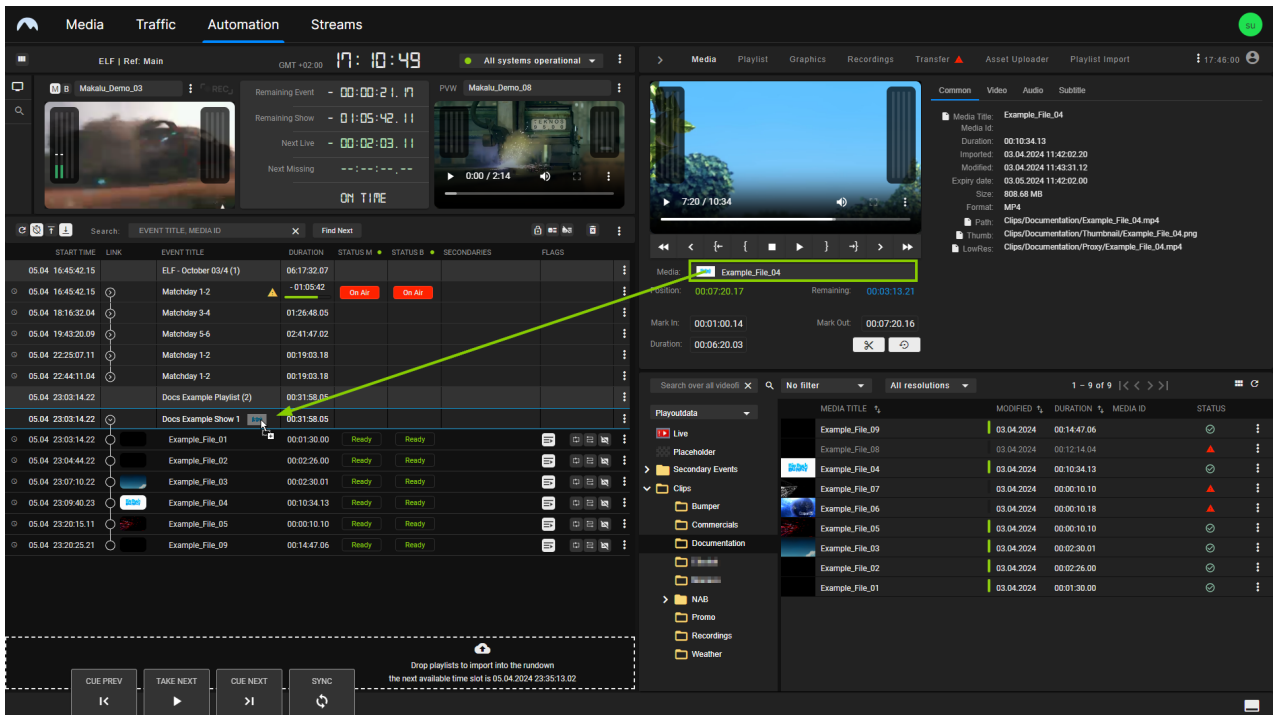
Below the player and metadata is a search bar with 'Search over all videos' and a magnifying glass icon. There are filters for 'No filter' and 'All resolutions'. The page shows '1 - 9 of 9' items. Below this is a table of media items:

	MEDIA TITLE ↑	MODIFIED ↑	DURATION ↑	MEDIA ID	STATUS
	Example_File_09	03.04.2024	00:14:47.06		✓
	Example_File_08	03.04.2024	00:12:14.04		▲
	Example_File_04	03.04.2024	00:10:34.13		✓
	Example_File_07	03.04.2024	00:00:10.10		▲
	Example_File_06	03.04.2024	00:00:10.18		▲
	Example_File_05	03.04.2024	00:00:10.10		✓
	Example_File_03	03.04.2024	00:02:30.01		✓
	Example_File_02	03.04.2024	00:02:26.00		✓
	Example_File_01	03.04.2024	00:01:30.00		✓

On the left side of the table is a sidebar with a 'Playoutdata' dropdown menu. The menu is expanded to show a tree view of folders: Live, Placeholder, Secondary Events, Clips (with a checkmark), Bumper, Commercials, Documentation, and NAB (with a checkmark). Under NAB, there are sub-folders for Promo, Recordings, and Weather.

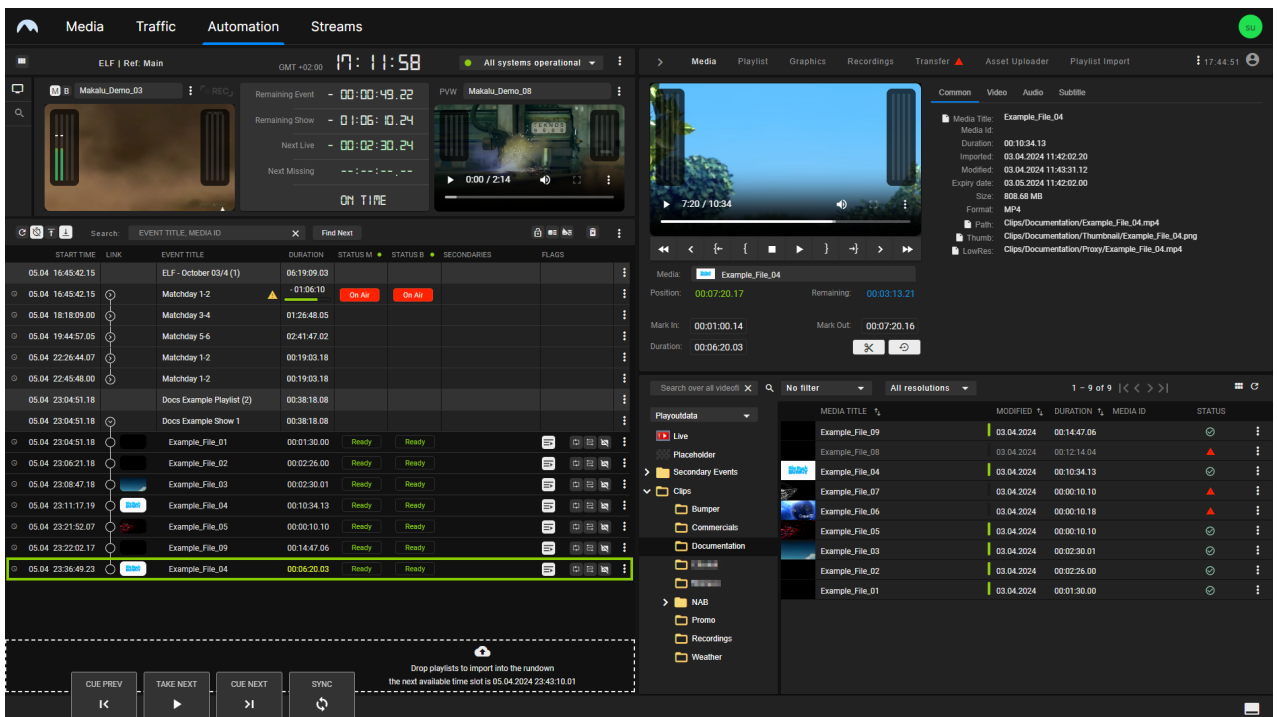
#### Automation - Trimmed media - Mark out set

8. Depending on whether you want to trim the media asset temporarily or permanently, proceed as follows:
  - a. To trim the media asset temporarily, use the draggable element below the preview player (consisting of thumbnail and file name) and drag it on the show to which you want to add it.



Automation - Add trimmed media to a show

The selected video file is added to the rundown as the last clip of the selected show.



Automation - Trimmed media added to a show

**Tip**

Instead of adding a trimmed clip at the end of a show, you can also replace an individual clip in a show by dropping the draggable element directly on the clip to be replaced while holding **[Ctrl]**. In this case, a confirmation dialog is displayed that also informs you if the rundown duration will be shortened or extended by this replacement. For more information, see sections [Replacing a clip with another media item](#) and [Replacing a clip with another playlist item](#).


To add the trimmed clip before an existing clip in a show, drag and drop the trimmed clip on an existing clip (without holding **[Ctrl]**).

**Notice**

Trimmed files in the rundown are recognizable by their color. Their scheduled duration is highlighted in yellow.

**Notice**

If the added file is not available on the playout nodes of the channel, file transfers are automatically started. As a result, the corresponding file is copied from the ingest storage to all playout nodes that are assigned to the channel.

- b. To trim the media asset permanently, click the **Trim** icon . In the **Set media title** dialog enter a title for the new media asset and click **Apply**.

*This creates a new media asset based on the set mark in and mark out points. It is listed in the media asset list in the same folder as the original asset and is recognizable by a scissor icon in the thumbnail. You can add it to a show as described in section [Adding media to the rundown](#). After adding it to the rundown, its duration is highlighted in yellow as it is shorter than the duration of the original media asset.*

9. (Optional) [Change the show's clip list order](#) to move the added clip to a specific position within the selected show.

**ADDING SECONDARY EVENTS TO THE RUNDOWN**

To add a secondary event to the rundown, proceed as follows:

1. On the right side, select the **Media** tab.

*All available media items are listed in the media list.*



The screenshot shows the Automation interface with the 'Automation' tab selected. The top navigation bar includes 'Media', 'Traffic', 'Automation', and 'Streams'. The main area displays a media player and a table of events. The 'Media' tab is expanded, showing a list of media items.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
05.04 16:45:42.15		ELF - October 09/4 (1)	06:25:01.14				
05.04 16:45:42.15		Matchday 1-2	-01:06:03	On Air	On Air		
05.04 18:24:01.11		Matchday 3-4	01:26:48.05				
05.04 19:50:49.17		Matchday 5-6	02:41:47.02				
05.04 22:32:36.19		Matchday 1-2	00:19:03.18				
05.04 22:51:40.12		Matchday 1-2	00:19:03.18				
05.04 23:10:44.05		Docs Example Playlist (2)	00:38:18.08				
05.04 23:10:44.05		Docs Example Show 1	00:38:18.08				
05.04 23:10:44.05		Example_File_01	00:01:30.00	Ready	Ready		
05.04 23:12:14.05		Example_File_02	00:02:26.00	Ready	Ready		
05.04 23:14:40.05		Example_File_03	00:02:30.01	Ready	Ready		
05.04 23:17:10.06		Example_File_04	00:10:34.13	Ready	Ready		
05.04 23:27:44.19		Example_File_05	00:00:10.10	Ready	Ready		
05.04 23:27:55.04		Example_File_09	00:14:47.06	Ready	Ready		
05.04 23:42:42.10		Example_File_04	00:06:20.03	Ready	Ready		

The media list table shows columns for 'PLAYOUTDATA', 'MEDIA TITLE', 'MODIFIED', 'DURATION', 'MEDIA ID', and 'STATUS'. The 'Secondary Events' folder is expanded, showing items like 'Logo' and 'Example\_File\_01' through 'Example\_File\_09'.

Automation - Show expanded and media tab opened

- In the media list click **Secondary Events** and select the type of secondary event you want to add.
- Select a secondary event and drag it on a show or clip in the rundown.

The screenshot shows the Automation interface with the 'Automation' tab selected. The main area displays a media player and a table of events. The 'Media' tab is expanded, showing a list of media items. A red arrow points to the 'Secondary Events' folder in the media list, and a green arrow points to the 'Logo' item.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
05.04 16:45:42.15		ELF - October 09/4 (1)	06:27:12.23				
05.04 16:45:42.15		Matchday 1-2	-01:06:07	On Air	On Air		
05.04 18:26:12.20		Matchday 3-4	01:26:48.05				
05.04 19:53:01.01		Matchday 5-6	02:41:47.02				
05.04 22:34:48.03		Matchday 1-2	00:19:03.18				
05.04 22:53:51.21		Matchday 1-2	00:19:03.18				
05.04 23:12:55.14		Docs Example Playlist (2)	00:38:18.08				
05.04 23:12:55.14		Docs Example Show 1	00:38:18.08				
05.04 23:12:55.14		Example_File_01	00:01:30.00	Ready	Ready		
05.04 23:14:25.14		Example_File_02	00:02:26.00	Ready	Ready		
05.04 23:16:51.14		Example_File_03	00:02:30.01	Ready	Ready		
05.04 23:19:21.15		Example_File_04	00:10:34.13	Ready	Ready		
05.04 23:29:56.03		Example_File_05	00:00:10.10	Ready	Ready		
05.04 23:30:06.13		Example_File_09	00:14:47.06	Ready	Ready		
05.04 23:44:53.19		Example_File_04	00:06:20.03	Ready	Ready		

The media list table shows columns for 'PLAYOUTDATA', 'MEDIA TITLE', 'SUBTYPE', and 'CREATED'. The 'Secondary Events' folder is expanded, showing items like 'Logo' and 'Example\_File\_01' through 'Example\_File\_09'.

Automation - Secondary event selected

Depending on the secondary event type, a menu may be displayed, that requires you to set the properties of the secondary event. For more information about the available properties, see section [Secondary events](#). After you have set and confirmed

the properties, the selected secondary event is added to the show or clip, which is indicated by the corresponding icon in the **Secondaries** column.

The screenshot displays a broadcast automation interface with the following components:

- Navigation:** Media, Traffic, Automation (selected), Streams.
- Channel Info:** ELF | Ref: Main, GMT +02:00, 17:21:26, All systems operational.
- Event Timers:** Remaining Event (00:00:50.17), Remaining Show (01:06:10.02), Next Live (00:02:31.02), Next Missing (---:---:---).
- Video Preview:** Two preview windows showing video feeds. The right window shows a video player with 0:00 / 2:14.
- Search Bar:** Search: EVENT TITLE, MEDIA ID. Find Next.
- Event List Table:**

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
05.04 16:45:42.15		ELF - October 03/4 (1)	06:28:37.12				
05.04 16:45:42.15	⌵	Matchday 1-2	- 01:06:10	On Air	On Air		
05.04 18:27:37.10	⌵	Matchday 3-4	01:26:48.05				
05.04 19:54:25.15	⌵	Matchday 5-6	02:41:47.02				
05.04 22:36:12.17	⌵	Matchday 1-2	00:19:03.18				
05.04 22:55:16.10	⌵	Matchday 1-2	00:19:03.18				
05.04 23:14:20.03		Docs Example Playlist (2)	00:38:18.08				
05.04 23:14:20.03	⌵	Docs Example Show 1	00:38:18.08				
05.04 23:14:20.03	⊙	Example_File_01	00:01:30.00	Ready	Ready		
05.04 23:15:50.03	⊙	Example_File_02	00:02:26.00	Ready	Ready		
05.04 23:18:16.03	⊙	Example_File_03	00:02:30.01	Ready	Ready		
05.04 23:20:46.04	⊙	Example_File_04	00:10:34.13	Ready	Ready		
05.04 23:31:20.17	⊙	Example_File_05	00:00:10.10	Ready	Ready		
05.04 23:31:31.02	⊙	Example_File_09	00:14:47.06	Ready	Ready		
05.04 23:46:18.08	⊙	Example_File_04	00:06:20.03	Ready	Ready		
- Bottom Panel:** CUE PREV, TAKE NEXT, CUE NEXT, SYNC. A dashed box contains the text: "Drop playlists to import into the rundown the next available time slot is 05.04.2024 23:52:38.11".

Automation - Secondary event added to a clip

**Tip**

To expand the list of secondary events of a specific type added to a show or clip, click the corresponding icon in the **Secondaries** column.

The screenshot shows the Automation interface with a table of events. The table has columns for START TIME, LINK, EVENT TITLE, DURATION, STATUS M, STATUS B, SECONDARIES, and FLAGS. A row for 'Example\_File\_01' is highlighted with a green box, and a vertical line indicates the expanded list of secondary events for that row.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
05.04 16:45:42.15		ELF - October 03/4 (1)	06:29:46.05				
05.04 16:45:42.15	⌵	Matchday 1-2	- 01:05:55	On Air	On Air		
05.04 18:28:46.02	⌵	Matchday 3-4	01:26:48.05				
05.04 19:55:34.08	⌵	Matchday 5-6	02:41:47.02				
05.04 22:37:21.10	⌵	Matchday 1-2	00:19:03.18				
05.04 22:56:25.03	⌵	Matchday 1-2	00:19:03.18				
05.04 23:15:28.21		Docs Example Playlist (2)	00:38:18.08				
05.04 23:15:28.21	⌵	Docs Example Show 1	00:38:18.08				
05.04 23:15:28.21	⌵	Example_File_01	00:01:30.00	Ready	Ready	📄	⌵ ⌵ ⌵ ⌵ ⌵
00:00:00.00	📄	Logo	00:00:00.00			Singular Live	⌵
05.04 23:16:58.21	⌵	Example_File_02	00:02:26.00	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵
05.04 23:19:24.21	⌵	Example_File_03	00:02:30.01	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵
05.04 23:21:54.22	⌵	Example_File_04	00:10:34.13	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵
05.04 23:32:29.10	⌵	Example_File_05	00:00:10.10	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵
05.04 23:32:39.20	⌵	Example_File_09	00:14:47.06	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵
05.04 23:47:27.01	⌵	Example_File_04	00:06:20.03	Ready	Ready		⌵ ⌵ ⌵ ⌵ ⌵

Drop playlists to import into the rundown  
the next available time slot is 05.04.2024 23:53:47.04

CUE PREV TAKE NEXT CUE NEXT SYNC

Automation - Clip secondary event list expanded

4. To add more secondary events, repeat step three.

The selected secondary events are added.

## Editing the rundown

### EDITING THE START TIME OF A SHOW OR CLIP

To edit the start time of a show or clip, proceed as follows:

#### **Notice**

You can only edit the start time if the corresponding show or clip is not currently on-air.

1. In the rundown click the **clock** icon 🕒 of the show or clip to be edited.

#### **Tip**

If the show display is expanded, the clock icon is not displayed for the show, but for the first clip of the show. In this case, click the clock icon of the first clip.

The screenshot displays a broadcast control interface. At the top, it shows 'ELF | Ref: Main', 'GMT +02:00', and a digital clock '13:05:02'. Below this, there are two video preview windows: 'M B Makalu\_Demo\_03' on the left and 'PVW Makalu\_Demo\_08' on the right. The central area contains event timing information: 'Remaining Event - 00:00:30.20', 'Remaining Show + 01:20:47.24', 'Next Live - 00:17:07.09', and 'Next Missing - 00:06:45.13'. Below the timing is a 'ON TIME' indicator. The main part of the interface is a rundown list with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The first clip in the list, 'Example\_File\_01' at 19:12:32.17, has a clock icon highlighted in green. Other clips include 'Hamburg Sea Devils Tea...', '07\_SIG\_END\_OF\_3RD1', 'SEH\_ELF\_TEASER\_20 PL...', '06\_SIG\_HALFTIME', 'Berlin Thunder Team Onl...', 'Docs Example Playlist (2)', 'Example\_File\_02', 'Example\_File\_03', 'Example\_File\_04', 'Example\_File\_05', and 'Example\_File\_09'.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 18:59:43.01		Hamburg Sea Devils Tea...	00:05:31.14	Ready	Ready		
08.04 19:05:14.15		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
08.04 19:05:26.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:05:46.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:06:06.15		06_SIG_HALFTIME	00:00:12.00	Ready	Ready		
08.04 19:06:18.15		Berlin Thunder Team Onl...	00:06:14.02	Ready	Ready		
08.04 19:12:32.17		Docs Example Playlist (2)	00:42:32.18				
08.04 19:12:32.17		Example_File_01	00:01:30.00	Ready	Ready		
08.04 19:14:02.17		Example_File_02	00:02:26.00	Ready	Ready		
08.04 19:16:28.17		Example_File_03	00:02:30.01	Ready	Ready		
08.04 19:18:58.18		Example_File_04	00:10:34.13	Ready	Ready		
08.04 19:29:33.06		Example_File_05	00:00:10.10	Ready	Ready		
08.04 19:29:43.16		Example_File_04	00:10:34.13	Ready	Ready		
08.04 19:40:18.04		Example_File_09	00:14:47.06	Ready	Ready		

Automation - Edit show start time

- A dialog is displayed that asks you to select a start date and time (format `hh:mm:ss:ff`).

**Notice**

You can only enter a start time that lies in the future.

- To confirm the new value, click **Apply**.

The edited scheduled start time is applied, and the start times of all clips used in the show are updated accordingly.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 19:05:14.15		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
08.04 19:05:26.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:05:46.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:06:06.15		06_SIG_HALFTIME	00:00:12.00	Ready	Ready		
08.04 19:06:18.15		Berlin Thunder Team Onl...	00:06:14.02	Ready	Ready		
08.04 19:12:32.17		Gap	- 40:47:27.07				
10.04 12:00:00.00		Docs Example Playlist (2)	00:42:32.18				
10.04 12:00:00.00		Example_File_01	00:01:30.00	Ready	Ready		
10.04 12:01:30.00		Example_File_02	00:02:26.00	Ready	Ready		
10.04 12:03:56.00		Example_File_03	00:02:30.01	Ready	Ready		
10.04 12:06:26.01		Example_File_04	00:10:34.13	Ready	Ready		
10.04 12:17:00.14		Example_File_05	00:00:10.10	Ready	Ready		
10.04 12:17:10.24		Example_File_04	00:10:34.13	Ready	Ready		
10.04 12:27:45.12		Example_File_09	00:14:47.06	Ready	Ready		

Automation - Show start time edited


## EDITING A CLIP

Via the **Edit clip** menu, you can view additional clip/event metadata and edit the following properties:

- title
- start time
- offset
- end time
- duration
- flags

You can decide if you want to apply the edited properties only to the selected occurrence of the clip in the rundown or also to all following occurrences.

To edit a clip, proceed as follows:

1. Expand the show that contains the clip to be edited, by clicking the corresponding **Expand** icon  in the link column.  
*The show is expanded, and all included clips are listed.*
2. Open the **Edit clip** menu, by clicking the **Duration** field of the clip to be edited.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 18:50:36.22		Berlin Thunder Team Onl...	00:06:14.02	Ready	Ready		
08.04 18:56:50.24		07_SIG_END_OF_3RD	00:00:12.00	Ready	Ready		
08.04 18:57:02.24		Berlin Thunder Team Onl...	00:06:14.02	Ready	Ready		
08.04 19:03:17.01		Hamburg Sea Devils Tea...	00:05:31.14	Ready	Ready		
08.04 19:08:48.15		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
08.04 19:09:00.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:09:20.15		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:09:40.15		06_SIG_HALFTIME	00:00:12.00	Ready	Ready		
08.04 19:09:52.15		Berlin Thunder Team Onl...	00:06:14.02	Ready	Ready		
08.04 19:16:06.17		Gap	- 40:43:53.07				
10.04 12:00:00.00		Docs Example Playlist (2)	00:42:32.18				
10.04 12:00:00.00		Example_File_01	00:01:30.00	Ready	Ready		
10.04 12:01:30.00		Example_File_02	00:02:26.00	Ready	Ready		
10.04 12:03:56.00		Example_File_03	00:02:30.01	Ready	Ready		
10.04 12:06:26.01		Example_File_04	00:10:34.13	Ready	Ready		
10.04 12:17:00.14		Example_File_05	00:00:10.10	Ready	Ready		
10.04 12:17:10.24		Example_File_04	00:10:34.13	Ready	Ready		
10.04 12:27:45.12		Example_File_09	00:14:47.06	Ready	Ready		

Automation - Open the Edit clip menu

The **Edit clip** menu opens.

### Edit clip

Event Title

Event Id

change event title of the corresponding clips in the rundown

---

Media

Media Title

Media Id

Media Path

---

Start

Start Time

set fix Start Time    hours   minutes   seconds   frames

Offset

hours   minutes   seconds   frames

---

End

Duration

hours   minutes   seconds   frames

End Time

hours   minutes   seconds   frames

---

Flags

---

Automation - Edit clip menu

3. Edit the clip properties:



- a. To edit the title, select the **Event Title** field and edit it as desired.

**Notice**

If you not only want to apply your changes to the clip currently selected but to all occurrences of the clip in the rundown, enable the checkbox **Change event title of the corresponding clips in the rundown**.

- b. To edit the start time, enable the checkbox **Set fix Start Time** and set the desired date and time.
- c. To use an offset, enable the checkbox **Offset** and set the time as desired.
- d. To edit the duration, enable the checkbox **Duration** and set the time as desired.

**Notice**

If you enter a scheduled duration that is longer than the original duration, the clip playback is looped. When the original duration ends, the clip playback starts from the beginning and plays until the entered scheduled duration is reached.



If you enter a scheduled duration that is shorter than the original duration, the clip playback stops when the entered scheduled duration is reached.

- e. To edit the end time, enable the checkbox **End Time** and set the desired date and time.
- f. To edit the clip flags, enable or disable the corresponding **Flags** (for more information, see section [Clip flags](#)).
4. To confirm your changes, click **Apply**.

*The edited properties are saved.*

#### EDITING A SECONDARY EVENT

To change the properties of a secondary event assigned to a show or a clip, proceed as follows:

1. Expand the list of secondary events of the corresponding element (show or clip):
2. If you want to edit a secondary event of a show in the rundown, click the **Secondary Events** icon  in the **Secondaries** column of the corresponding show.
3. If you want to edit a secondary event of a clip in the rundown, click the [icon of the corresponding secondary event type](#) in the **Secondaries** column of the corresponding clip.
4. Open the **Edit secondary event** menu, by clicking the **Options** icon  on the right side of the corresponding secondary event and selecting **Edit Secondary**.

*The **Edit secondary event** menu opens. Depending on the type of selected secondary event different properties are available to be edited.*


5. Edit the properties of the selected secondary event.
6. To confirm your changes, click **Apply**.

*The edited properties are saved.*


## USING GROUPS

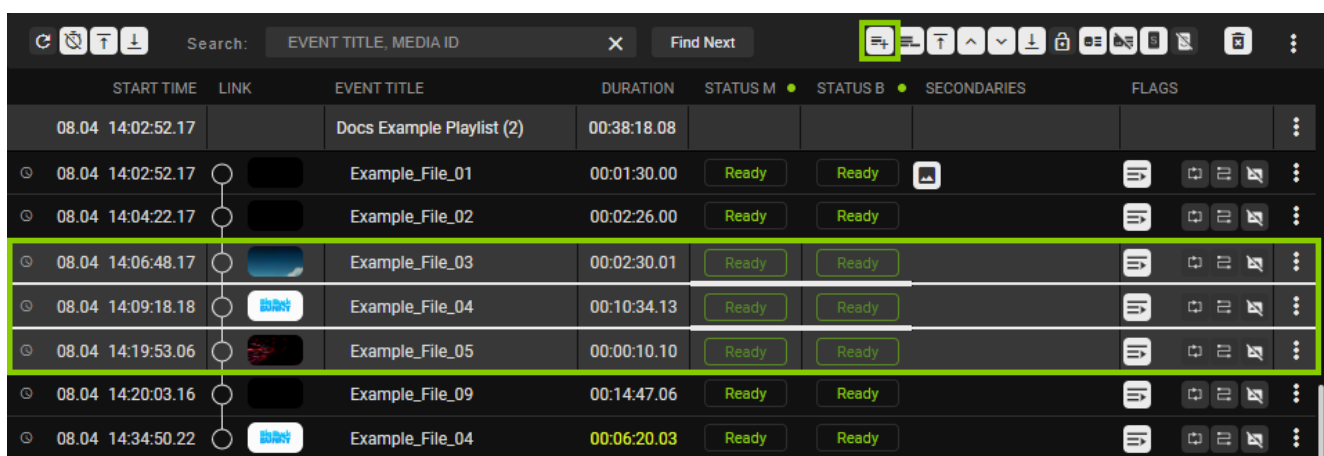
The group feature allows you to assign multiple clips within a show to a group and play them back in a loop. Each group is highlighted in a distinct color to facilitate the differentiation of groups.

To add clips to a group, proceed as follows:

1. In the rundown expand the show that contains the clips to be grouped, by clicking the corresponding **Expand** icon  in the link column.

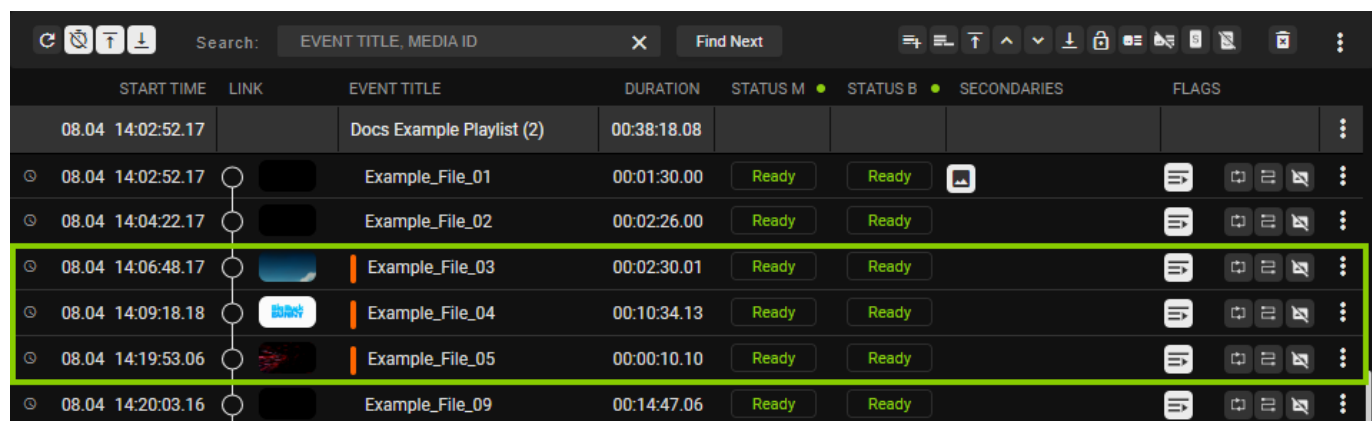
*The show is expanded, and all included clips are listed.*

2. In the selected show, select multiple clips to be grouped.
3. In the top right corner of the rundown, click the **Create group** icon .



Automation - Rundown - Create group

The selected clips are assigned to a new group and are highlighted in the group color (orange in the example below).




Automation - Rundown - Group created


### Tip

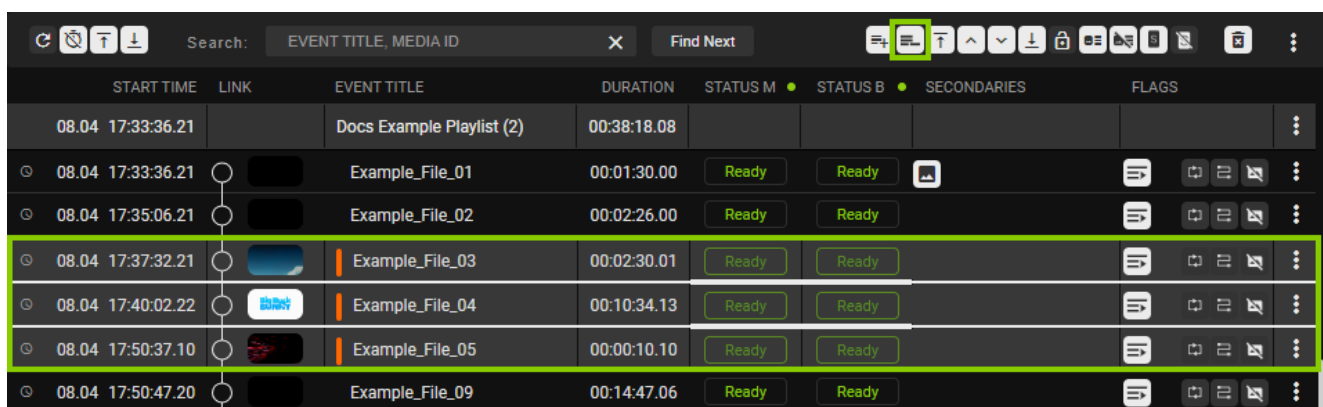
You can play a group of clips in a loop, by activating the [loop flag](#) for the last clip in a group. When the playback of the last clip in the group is finished, the playback of the first clip in the group starts again.

### Tip

In addition to grouping individually selected clips, you can group all clips of a show to play them in a loop. To do this, select the corresponding show and click the **Create group** icon  above the rundown. All clips of the show are grouped and the **loop flag** is activated for the last clip of the group.

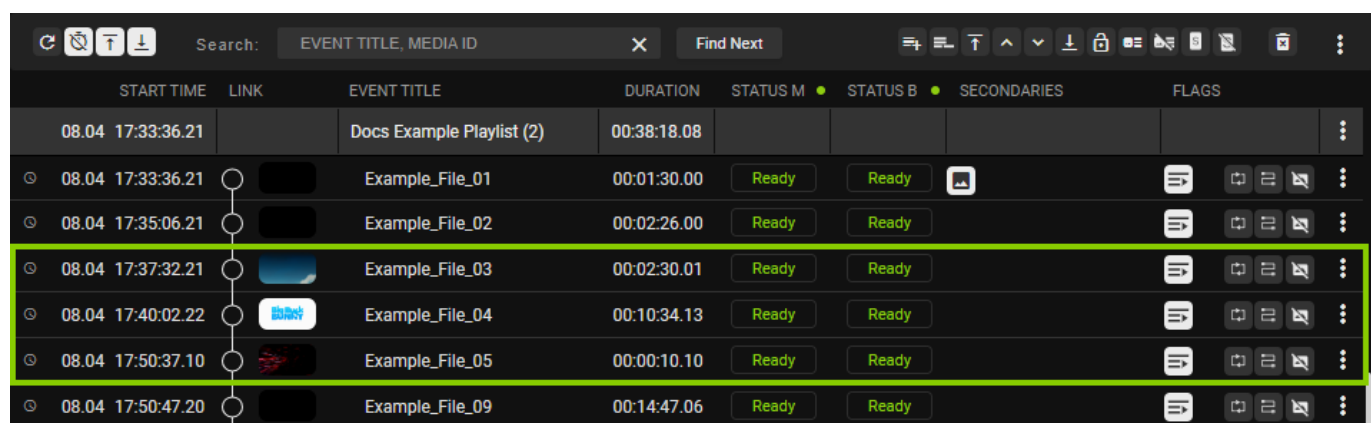
To remove clips from a group, proceed as follows:

1. Expand a show and select the clips to be removed from the group.
2. In the top right corner of the rundown, click the **Delete group** icon .



Automation - Remove clips from group


The selected clips are removed from the group. If all clips are removed from a group, the group is removed.







Automation - Clips removed from group

### MOVING CLIPS

To change the clip order of a show, proceed as follows:

1. In the rundown expand the show that contains the clip(s) to be moved, by clicking the corresponding **Expand** icon  in the link column.  
*The show is expanded, and all included clips are listed.*
2. Select one or more clips to be moved.
3. Depending on where you want to move the clips, select the corresponding function:

- a. To move the clips one position up in the list, click the **File up** icon .
- b. To move the clips one position down in the list, click the **File down** icon .
- c. To move the clips to the beginning of the selected show's clip list, click the **First file** icon .
- d. To move the clips to the end of the selected show's clip list, click the **Last file** icon .

*The clips are moved to the selected position.*

#### REPLACING A CLIP WITH ANOTHER MEDIA ITEM


##### Notice

This function can be used, for example, to replace a placeholder clip with another media asset (physical media file). In addition, it can be used to replace any clip in the rundown (regardless of the type) with any other available media asset (primary event), which is listed in the **Media** tab, either in the **Clips** folder (physical media files) or under **Live** (live sources).

##### Notice

Placeholders cannot be played back because they are virtual assets without a linked physical media file. If you should not be able to replace a placeholder scheduled in the rundown, before its actual playback starts, then the configured emergency screen or video is played for the planned duration of the placeholder.

To replace a clip in a rundown with another media item via the **Media** tab, proceed as follows:

1. In the rundown expand the show that contains the clip to be replaced, by clicking the corresponding **Expand** icon  in the link column.  
*The show is expanded, and all included clips are listed.*
2. On the right side select the **Media** tab.
3. In the media list, select the type of media asset (video file, live source, or placeholder).
4. Select one or more media assets.
5. Hold **[Ctrl]** and drag the selected item(s) from the media list on the right side and drop it on the clip to be replaced in the rundown on the left side.

The screenshot displays the Automation interface with a rundown of events on the left and a media library on the right. A green arrow points from a selected event in the rundown to a corresponding item in the media library.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS R	SECONDARIES	FLAGS
08.04 19:20:18.07		07_SIG_END_OF_3RD	00:00:12.00	Ready	Ready		
08.04 19:20:30.07		Matchday 1-2	00:19:03.18				
08.04 19:20:30.07		Berlin Thunder Team Only ...	00:06:14.02	Ready	Ready		
08.04 19:26:44.09		Hamburg Sea Devils Tea...	00:05:31.14	Ready	Ready		
08.04 19:32:15.23		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
08.04 19:32:27.23		SEH_ELF_TEASER_20 Pla...	00:00:20.00	Ready	Ready		
08.04 19:32:47.23		SEH_ELF_TEASER_20 Pla...	00:00:20.00	Ready	Ready		
08.04 19:33:07.23		06_SIG_HALF TIME	00:00:12.00	Ready	Ready		
08.04 19:33:19.23		Berlin Thunder Team Only ...	00:06:14.02	Ready	Ready		
08.04 19:39:34.00		Docs Example Playlist (2)	00:42:32.18				
08.04 19:39:34.00		Docs Example Show 1	00:17:10.24				
08.04 19:39:34.00		Example_File_01	00:01:30.00	Ready	Ready		
08.04 19:41:04.00		Example_File_02	00:02:26.00	Ready	Ready		
08.04 19:43:30.00		Example_File_03	00:02:30.01	Ready	Ready		
08.04 19:46:00.01		Example_File_04	00:10:34.13	Ready	Ready		
08.04 19:56:34.14		Example_File_05	00:00:10.10	Ready	Ready		
08.04 19:56:44.24		Docs Example Show 2	00:10:34.13				
08.04 20:07:19.12		Docs Example Show 3	00:14:47.06				

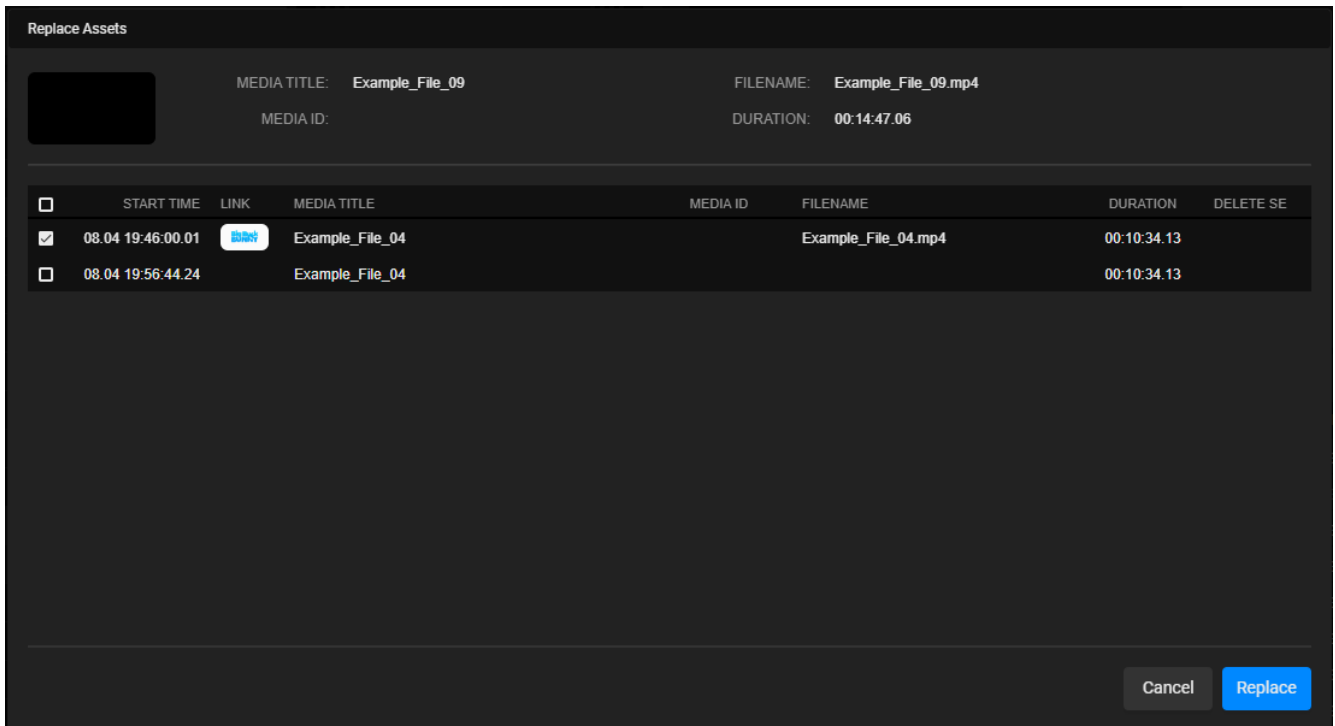
MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		🔴
Example_File_08	03.04.2024	00:12:14.04		🟢
Example_File_04	03.04.2024	00:10:34.13		🟢
Example_File_07	03.04.2024	00:00:10.10		🟢
Example_File_06	03.04.2024	00:00:10.18		🟢
Example_File_05	03.04.2024	00:00:10.10		🟢
Example_File_03	03.04.2024	00:02:30.01		🟢
Example_File_02	03.04.2024	00:02:26.00		🟢
Example_File_01	03.04.2024	00:01:30.00		🟢

Automation - Replace clip

### Notice

If the new item you want to use as a replacement is a live source, you must select the duration of the live clip and confirm it, by clicking **Apply**.

If you select and drag only a single item, the **Replace Assets** menu opens and all future occurrences of the clip to be replaced in the rundown are listed.



#### Automation - Replace assets menu

If you select and drag multiple items instead, they immediately replace the original item, and the **Replace Assets** menu is not displayed.

6. Select all the occurrences of the clip that you want to replace, by enabling the corresponding checkbox(es).
7. To confirm the replacement, click **Replace**.

All selected occurrences of the original rundown item are replaced by the new item.

Automation - Clip replaced

### Notice

If the new file is not available on the playout nodes of the channel, file transfers are automatically started. As a result, the corresponding file is copied from the ingest storage to all playout nodes that are assigned to the channel.

### REPLACING A CLIP WITH ANOTHER PLAYLIST ITEM

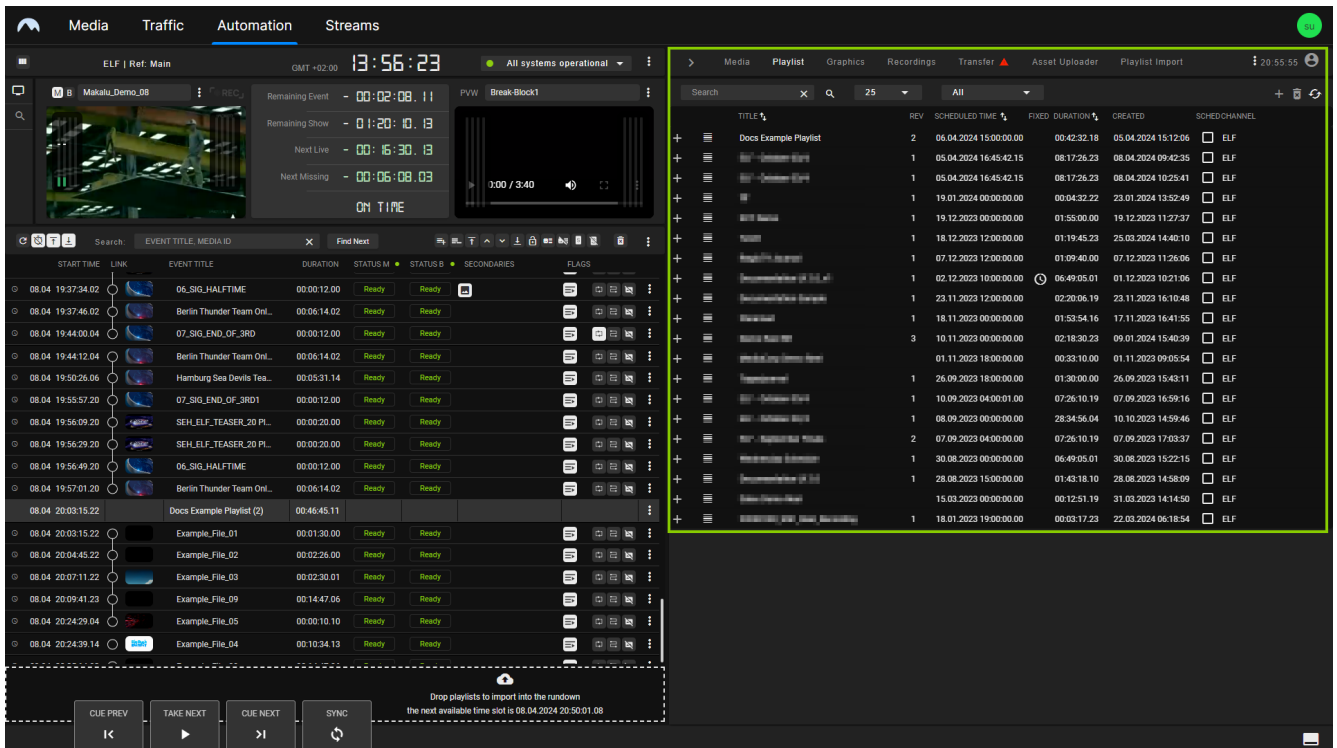
In addition to [replacing a clip with another media item](#) via the **Media** tab, you can also replace a clip in the rundown with one or more items from another playlist via the **Playlist** tab. If the playlist items you use as replacements have assigned secondary events and/or enabled clip flags, they will remain assigned after the replacement in the rundown. If default secondary events are configured for the corresponding Makalu channel, they are also added automatically when the playlist items are added to the rundown.

Replacing clips in this way may be especially useful for users who focus on playlists and prefer to search clips/assets using playlists rather than searching for files in the corresponding folder structures in the **Media** tab.

To replace a clip with one or more items from another playlist (via the **Playlist** tab), proceed as follows:

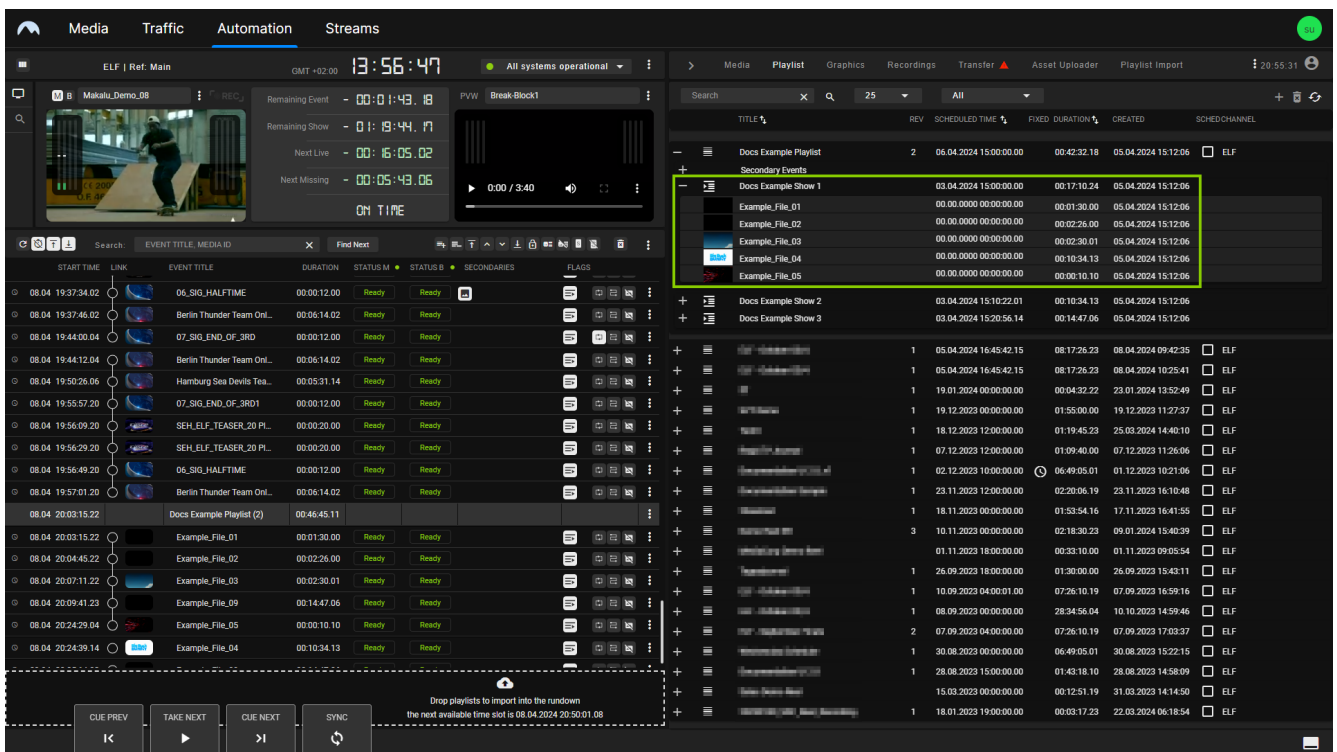
1. On the right side select the **Playlist** tab.

*All available playlists are listed.*



Automation - Playlist tab

2. Expand a playlist, by clicking the corresponding **Plus** icon.  
*All shows included in the playlist are listed.*
3. Expand a show, by clicking the corresponding **Plus** icon.  
*All clips included in the show are listed.*



Automation - List of clips



- Select one or more clips to be used as a replacement.

### Tip

You can select multiple individual clips from one or more playlists, by holding **[Ctrl]**. To select multiple consecutive clips from a playlist, hold **[Shift]**.



- Hold **[Ctrl]** and drag the selected clip(s) onto the clip to be replaced in the rundown.

The screenshot displays the Automation interface with a rundown of events on the left and a playlist of replacement clips on the right. A green arrow indicates the drag-and-drop action from a selected clip in the playlist to a target clip in the rundown.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 19:37:34.02		06_SIG_HALFTIME	00:00:12.00	Ready	Ready		
08.04 19:37:46.02		Berlin Thunder Team On...	00:06:14.02	Ready	Ready		
08.04 19:44:00.04		07_SIG_END_OF_3RD	00:00:12.00	Ready	Ready		
08.04 19:44:12.04		Berlin Thunder Team On...	00:06:14.02	Ready	Ready		
08.04 19:50:26.06		Hamburg Sea Devils Tea...	00:05:31.14	Ready	Ready		
08.04 19:55:57.20		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
08.04 19:56:09.20		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:56:29.20		SEH_ELF_TEASER_20 PL...	00:00:20.00	Ready	Ready		
08.04 19:56:49.20		06_SIG_HALFTIME	00:00:12.00	Ready	Ready		
08.04 19:57:01.20		Berlin Thunder Team On...	00:06:14.02	Ready	Ready		
08.04 20:03:15.22		Docs Example Playlist (2)	00:00:45.11				
08.04 20:03:15.22		Example_File_01	00:01:30.00	Ready	Ready		
08.04 20:04:45.22		Example_File_02	00:02:26.00	Ready	Ready		
08.04 20:07:11.22		Example_File_03	00:02:30.01	Ready	Ready		
08.04 20:09:47.23		Example_File_09	00:14:47.06	Ready	Ready		
08.04 20:24:29.04		Example_File_05	00:00:10.10	Ready	Ready		
08.04 20:24:39.14		Example_File_04	00:10:34.13	Ready	Ready		

Automation - Replace playlist items via drag and drop

### Tip

To find and select a specific playlist as a target for the replacement, you can jump between the playlists in the rundown, by using the **Next playlist** icon  and **Previous playlist** icon  on the left side above the rundown.

If you selected multiple clips as replacements, they directly replace the target clip in the rundown, without any additional actions required. If you selected a single clip as a replacement, the **Replace Assets** menu opens as described in section [Replacing a clip with another media item](#). It enables you to decide if you only want to replace the single occurrence of the clip in the rundown or also other or all future occurrences of it in the rundown.

The screenshot displays the Media Automation interface. At the top, there are tabs for 'Media', 'Traffic', 'Automation', and 'Streams'. The 'Automation' tab is active. Below the tabs, there's a header area showing 'ELF | Ref: Main', 'GMT +02:00', and a clock '13:57:55'. A status indicator says 'All systems operational'. The main area is split into two panels. The left panel shows a video player with a 'REC' indicator and a 'P.W. Break-Block1' label. Below the player is a table of events with columns: START TIME, LINK, EVENT TITLE, DURATION, STATUS M, STATUS B, SECONDARIES, and FLAGS. The right panel shows a playlist table with columns: TITLE, REV, SCHEDULED TIME, FIXED, DURATION, CREATED, and SCHED CHANNEL. At the bottom, there are control buttons: 'CUE PREV', 'TAKE NEXT', 'CUE NEXT', and 'SYNC'. A message at the bottom right says 'Drop playlists to import into the rundown the next available time slot is 08.04.2024 21:01:46.07'.

Automation - Updated playlist

### Tip

If you only want to add new items to the rundown instead of replacing existing elements, execute step five without holding [Ctrl].

## SEARCHING FOR AND REPLACING CLIPS

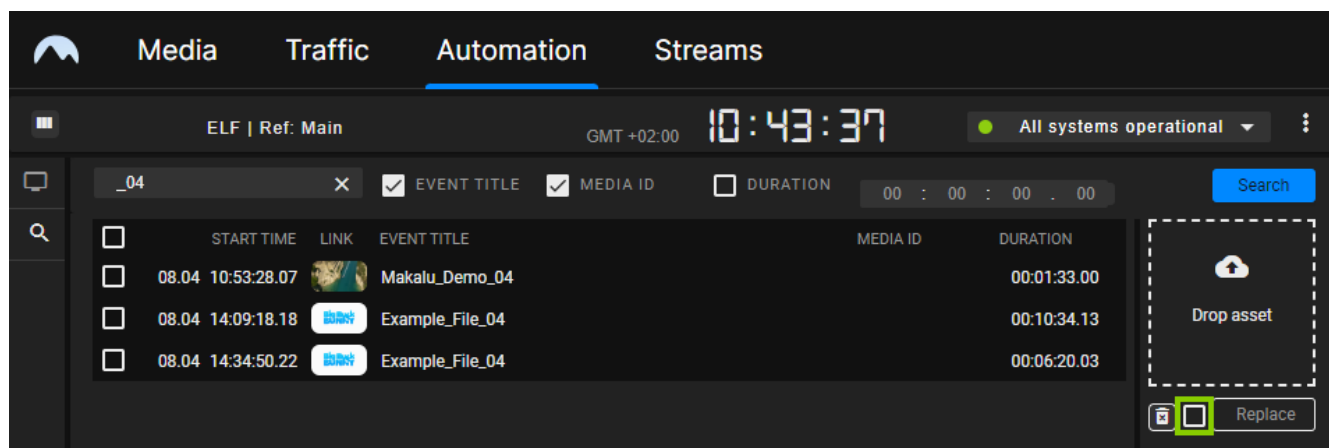
In addition to replacing a clip via drag and drop as described in section [Replacing a clip with another media item](#) or with [another playlist item](#), you can alternatively use the search/replace view for this purpose. This also enables you to search for rundown items, based on their event title, media ID, and/or duration, and replace them with a different media item.

### Notice

When replacing rundown items via the search/replace view, all properties and metadata of the original item are usually replaced by those of the new item. This includes, for example, the title, file path, and any existing secondary events.

There is a special optional feature when replacing placeholders with a file-based media item, that enables you to keep all the metadata of the original placeholder item instead, so that only the file path is replaced.

To use this feature, enable the checkbox between the **Delete** icon and the **Replace** button below the **Dropzone** of the search/replace view.



*Automation - Search and replace (keep placeholder metadata)*

A use case where this feature can be useful is a rerun of a live show in "fast turnaround mode". This applies when there is a live element scheduled in the rundown and a rerun should be played a short time afterward (scheduled with a corresponding placeholder asset). The live element is recorded and the placeholder has a specific title and media ID. Only the actual file name of the recording is unknown before to the recording. When the recording of the live element is completed, and you replace the corresponding rerun placeholder with the mentioned checkbox enabled, the original metadata of the placeholder is retained, but the actual file name of the recorded live element is used.

To use the search/replace view, proceed as follows:

1. In the preview area navigation at the top left click the **Search** icon .
 

*The search/replace view is displayed.*
2. Enter your search term in the **Search** field.
3. (Optional) If you only want to search based on the **Event title** or **Media ID**, select/deselect the corresponding checkbox.
4. (Optional) If you also want to search based on the duration, enable the **Duration** checkbox, and enter the duration.
5. Click **Search** at the top right of the search/replace view area.
 

*The search results are listed below.*
6. In the search result list select the item(s) to be replaced, by enabling the checkbox to the left of the item(s).
7. Drag the item to be used as a replacement from the **Media** area on the right and drop it on the **Dropzone** on the right side of the search/replace view.
8. To confirm the replacement, click **Replace**.

The selected rundown items are replaced by the new item.

### Tip

To clear the dropzone, click the **Delete** icon  below it.

### Notice

If the new file is not available on the playout nodes of the channel, file transfers are automatically started. As a result, the corresponding file is copied from the ingest storage to all playout nodes that are assigned to the channel.

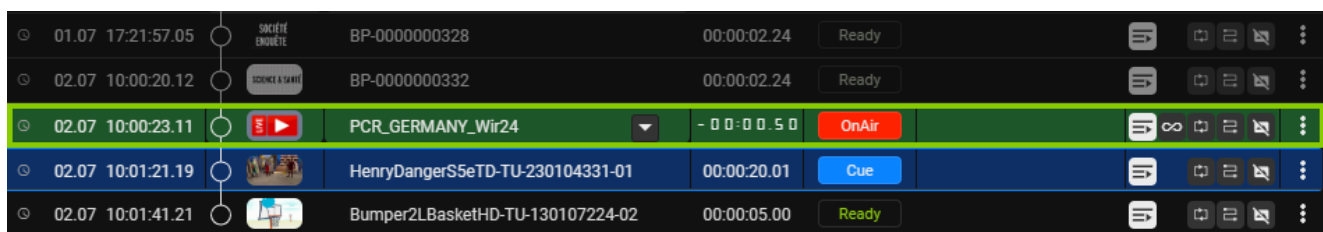
#### SWITCHING A RUNNING LIVE SOURCE

When a live source is on-air, it may be necessary to switch to another live source at short notice, for example, if the current live source becomes unavailable due to a signal outage. For this purpose, Makalu enables you to edit the rundown and quickly switch to another live source.

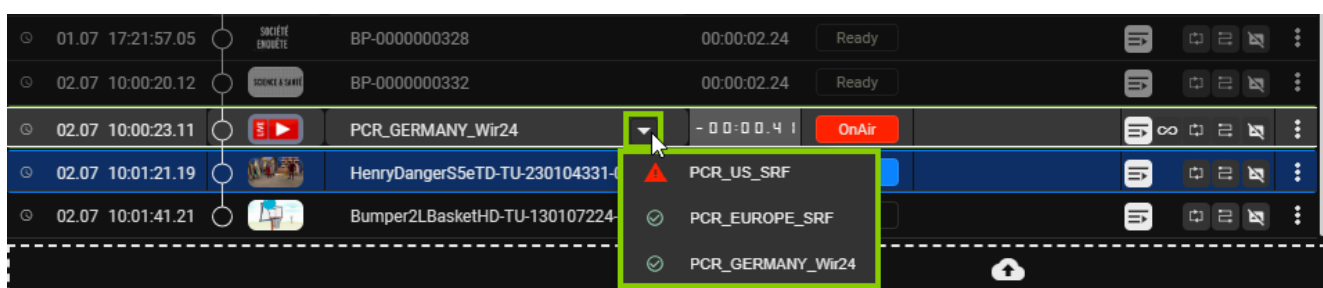
To switch a running live source, proceed as follows:

1. In the rundown, click the **Select source** icon  of the live clip to be changed.

A dropdown menu with all available live sources opens.



Automation - Running live source





Automation - List of available live sources

2. Select the new live source from the dropdown menu.

### Tip

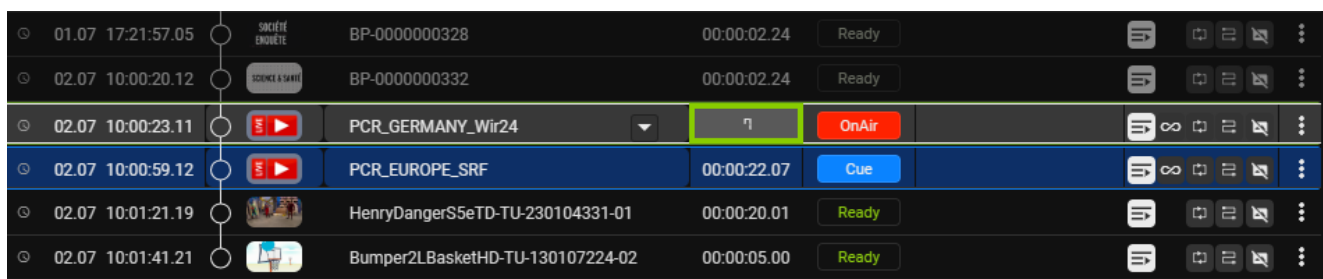
In this menu, the current connection status of each live source is indicated by a corresponding icon:

-  - live source is connected
-  - live source is not connected

When you switch a running live source, you should usually select a source that is listed as "connected". This enables uninterrupted switching between the two live sources. It is still possible to select a live source that is listed as "not connected" (regardless if the initial live source is currently on-air or scheduled for a later time). This is necessary, for example, if you want to switch a live source that is not currently on-air but is scheduled for a later time in the rundown. However, you should avoid selecting a live source that is listed as "not connected" when switching the on-air live source, as this usually results in black frame channel output.

### 3. Confirm the dialog, by clicking **Yes**.

The switchover to the new live clip is prepared. A new clip that uses the selected live source is added to the rundown directly after the current clip and is cued. The end time of the original clip is applied to the new clip, which ensures that this change has no impact on the scheduled start times of subsequent clips in the rundown. A countdown for switching to the new live source is displayed.

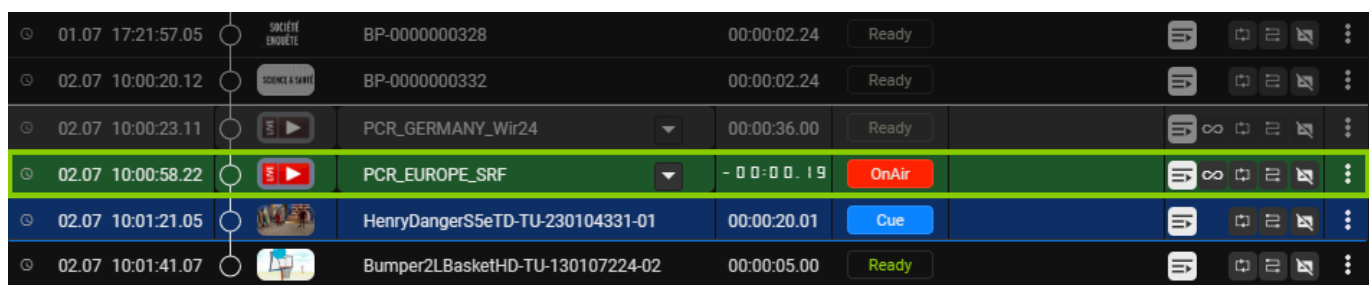


Automation - Countdown for live source switchover

### Notice

The duration of the switchover interval countdown is configurable. It is set to 10 seconds by default.

When the countdown expires, playback switches to the new live source.



Automation - Switchover to new live source completed

## UPDATING A PLAYLIST

Makalu enables you to efficiently update and replace individual items of a playlist or entire playlists in the rundown via the **Update rundownplaylist** menu/dialog. It is designed to compare and update two almost identical playlists. A typical use case

for this feature is when a new revision of a playlist is created with minor changes, but an older revision of the same playlist is already scheduled in the rundown (or even currently on-air) and you want to replace the parts of it that have changed.

**i Notice**

To update a playlist in the rundown, the start time of the playlist can be in the past, but its end time must be in the future. Playlists with an end time in the past cannot be updated.

Example: The playlist currently on-air contains a live element with unknown duration (the **Open end** flag is enabled, see section [Clip flags](#)). The actual duration of the live element is only known when it actually ends and may be shorter or longer than originally planned. This may have an impact on the durations of subsequent clips. For example, it may be necessary to remove, add, shorten, or extend clips to compensate for the changed duration of the live element. To do this, you can create a new revision of the playlist via Makalu Traffic and use the **Update rundownplaylist** menu/dialog in Makalu Automation to update the old revision of the playlist in the rundown with the new one.

**i Notice**

A new revision of a playlist is created whenever it is sent to playout from Makalu Traffic. The revision number of a playlist in the rundown can be recognized by the number in brackets after the name of the playlist. In the **Playlist** tab, the revision number is listed in the **Rev** column.

For more information, see section [Sending a playlist to playout](#).

**i Notice**

When you update a playlist, you are not limited to using a new revision of an original playlist as a replacement. Instead, you can update or replace any playlist in the rundown with any available playlist.

You can open the **Update rundownplaylist** menu/dialog, by holding **[Ctrl]** and dragging a playlist from the **Playlist** tab onto a playlist in the rundown.

UPDATE RUNDOWNPLAYLIST

**Current Playlist**

Name: Docs Example Playlist

Start Time: 08.04.2024 21:09:50.01

Duration: 00:58:30.10

End Time: 08.04.2024 22:08:20.10

**Difference**

Start Time Diff: 00:00:00.00

Duration Diff: -00:15:59.17

Mode: **Bulk** Sequential

**New Playlist**

Name: Docs Example Playlist

Start Time: 08.04.2024 21:09:50.01

Duration: 00:42:32.18

End Time: 08.04.2024 21:52:22.18

keep starttime

START TIME	LINK	EVENT TITLE	MEDIA ID	DURATION	START TIME	LINK	EVENT TITLE	MEDIA ID	DURATION
08.04 21:09:50.01	<input type="checkbox"/>	Example_File_03		00:02:30.01	08.04 21:09:50.01	<input type="checkbox"/>	Example_File_01		00:01:30.00
08.04 21:12:20.02	<input checked="" type="checkbox"/>	Example_File_04		00:10:34.13	08.04 21:11:20.01	<input type="checkbox"/>	Example_File_02		00:02:26.00
08.04 21:22:54.15	<input checked="" type="checkbox"/>	Example_File_05		00:00:10.10	08.04 21:13:46.01	<input checked="" type="checkbox"/>	Example_File_03		00:02:30.01
08.04 21:23:05.00	<input type="checkbox"/>	Example_File_02		00:02:26.00	08.04 21:16:16.02	<input checked="" type="checkbox"/>	Example_File_04		00:10:34.13
08.04 21:25:31.00	<input type="checkbox"/>	Example_File_03		00:02:30.01	08.04 21:26:50.15	<input checked="" type="checkbox"/>	Example_File_05		00:00:10.10
08.04 21:28:01.01	<input type="checkbox"/>	Example_File_09		00:14:47.06	08.04 21:27:01.00	<input checked="" type="checkbox"/>	Example_File_04		00:10:34.13
08.04 21:42:48.07	<input checked="" type="checkbox"/>	Example_File_05		00:00:10.10	08.04 21:37:35.13	<input type="checkbox"/>	Example_File_09		00:14:47.06
08.04 21:42:58.17	<input type="checkbox"/>	Example_File_04		00:10:34.13					
08.04 21:53:33.05	<input type="checkbox"/>	Example_File_09		00:14:47.06					

DUR: 00:00:00.00    DIFF: 00:00:00.00    DUR: 00:00:00.00    Take

Close

### Automation - Update rundownplaylist menu

The menu is divided into two sections. The section **Current Playlist** on the left side shows information about the current playlist to be updated in the rundown. Section **New Playlist** on the right side displays information about the playlist to be used for the update. Section **Difference** in the upper middle area displays information about the time differences between both playlists. Below this information, there is a **Mode** toggle that enables you to switch between the two update/replacement modes **bulk** and **sequential**.

**Bulk** mode enables you to select a clip in the current playlist and the new playlist. All clips starting with the first selected clip and all subsequent clips until the last clip of the playlist are automatically selected. When you click the **Take** button at the bottom right, all clips are replaced based on your selection.

The **Keep starttime** option is only available in **bulk** mode and enables you to decide how to handle the start times of the items of the new playlist. If enabled, the exact planned start times of the items of the new playlist are applied, which may create gaps. If disabled, the start times are ignored and the selected items of the new playlist are added directly after the last clip in the current playlist, that is not selected to be updated.

**Sequential** mode is intended for making smaller changes to the playlist one after the other. It recognizes and displays differences between the two playlists automatically and enables you to switch between them individually via the corresponding icons in the **DIFF** area at the bottom right, which also displays the total number of detected differences. You can apply each change, by enabling the corresponding checkbox in the clip list of the new playlist and clicking the **Take** button at the bottom right.

#### Update via bulk mode

To replace one or more items of a playlist in the rundown with one or more items from another playlist via the **Update rundownplaylist** menu/dialog in **bulk mode**, proceed as follows:

1. On the right side select the **Playlist** tab.

All available playlists are listed.

The screenshot shows the 'Automation' interface with the 'Playlist' tab selected. The main table lists various events with their start times, links, titles, durations, and statuses. The right-hand panel displays a detailed view of the playlist, listing items with their titles, revision numbers, scheduled times, fixed durations, creation dates, and scheduled channels. A green box highlights the Playlist tab and its content.

Automation - Playlist tab



2. Hold **[Ctrl]** and drag the new playlist from the **Playlist** tab onto the playlist to be updated in the rundown.

The screenshot shows the 'Automation' interface with the 'Playlist' tab selected. A green arrow points from the 'Docs Example Playlist (2)' item in the Playlist tab to the 'Docs Example Playlist (2)' item in the event table, illustrating the drag-and-drop action.

Automation - Drag new playlist into rundown



### Tip

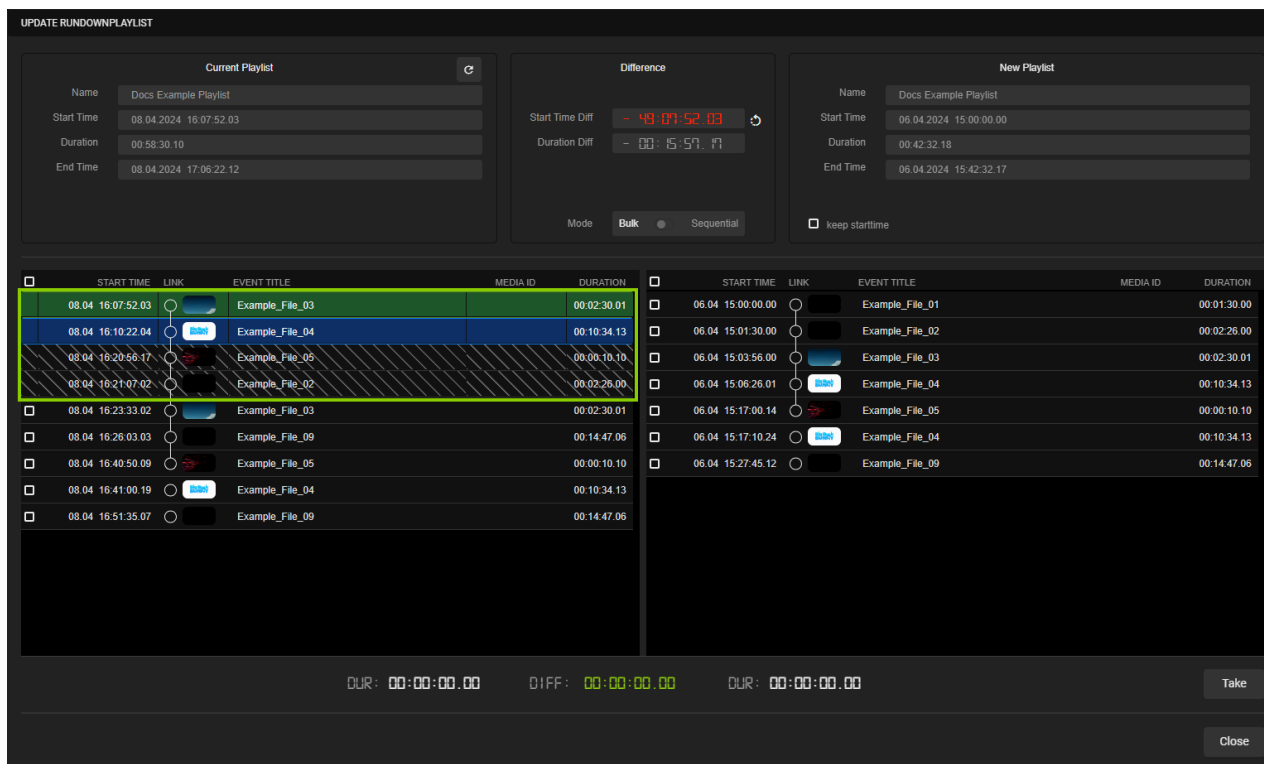
To find and select a specific playlist as a target for the replacement, you can conveniently jump between the playlists in the rundown, by using the **Next playlist** icon  and **Previous playlist** icon  on the left side above the rundown.

The **Update rundownplaylist** menu/dialog opens.

### Notice

If you want to update the playlist that is currently on-air, some clips cannot be updated/replaced. This includes the following types of clips, which are highlighted as follows in the **Update rundownplaylist** menu/dialog:

- the clip currently on-air (highlighted in green)
- the clip currently cued (highlighted in blue)
- one or more protected clips after the cued clip (the actual number depends on the duration of the clips and if it lies within a configurable protected time period, highlighted with stripes)



#### Automation - Clips that cannot be updated

The clip list (including the highlighted clips) in the **Update rundownplaylist** menu/dialog is automatically updated when the playback of the next clip starts.

3. Leave the **Mode** toggle set to **Bulk**.
4. Select the first clip to be replaced in the current playlist, by enabling the corresponding checkbox on the left side.

The clip and all subsequent clips until the end of the playlist are selected. The total duration of all selected clips is displayed below under **DUR**.

- Select the first clip to be used as a replacement in the new playlist, by enabling the corresponding checkbox on the right side.

The clip and all subsequent clips until the end of the playlist are selected. The total duration of all selected clips is displayed below under **DUR**. If the total duration of the selected clips differs between the two playlists, the time difference is displayed at the bottom in the middle under **DIFF**.

- (Optional) If you want to apply the exact start times of the items of the new playlist, enable the **Keep starttime** option.

### Warning

If the start time of the first selected clip of the new playlist does not begin directly after the end of the last unselected clip of the current playlist, the playlist update may result in gaps.

- To apply your settings and execute the replacement, click **Take**.

The screenshot displays the 'UPDATE RUNDOWNPLAYLIST' dialog. It is divided into three main sections: 'Current Playlist', 'Difference', and 'New Playlist'. Each section contains fields for Name, Start Time, Duration, and End Time. The 'Difference' section shows 'Start Time Diff' as 00:09:29.24 and 'Duration Diff' as 00:15:57.11. Below these are two tables of clips. The left table represents the current playlist, and the right table represents the new playlist. Each clip has a checkbox for selection. At the bottom of the dialog, the total duration (DUR) and difference (DIFF) are displayed: DUR: 00:45:15.11 and DIFF: -00:02:42.18. A 'Take' button is visible at the bottom right.

### Automation - Apply playlist update

The selected clips in the current playlist are replaced by the selected clips from the new playlist. When this is completed, the view is updated accordingly.

- Close the **Update rundownplaylist** menu/dialog, by clicking **Close**.

The update/replacement is complete.

#### Update via sequential mode

To replace one or more items of a playlist in the rundown with one or more items from another playlist via the **Update rundownplaylist** menu/dialog in **sequential mode**, proceed as follows:

- Execute steps one and two as described in section [Update via bulk mode](#).





- To apply other detected changes, repeat steps four and five.

### Tip

You can switch between the detected changes via the **Previous** icon  and **Next** icon  in the **DIFF** area at the bottom right.

- Close the **Update rundownplaylist** menu/dialog, by clicking **Close**.

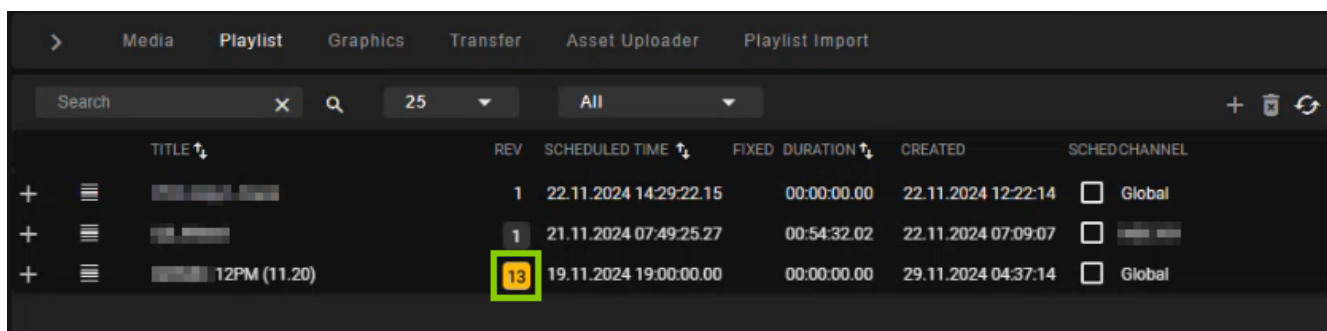
*The update/replacement is complete.*

#### Quick update via rundown (MOS integration)

Another method for updating a playlist is the quick update function. It minimizes the required user interaction and updates the playlist in the rundown automatically to the latest available version. From a technical point of view, this method corresponds to the previously described [update via bulk mode](#) but does not require using its update menu/dialog.

### Notice

The quick update method is only available for playlists that were created in a connected NRCS (Newsroom Computer System) and sent to Makalu via its MOS (Media Object Server) integration. When such a playlist is used in the rundown and a playlist update is received by Makalu, it is announced via a notification at the top of the screen. In addition, it is indicated by a playlist revision number highlighted in yellow in the **Playlist** tab.



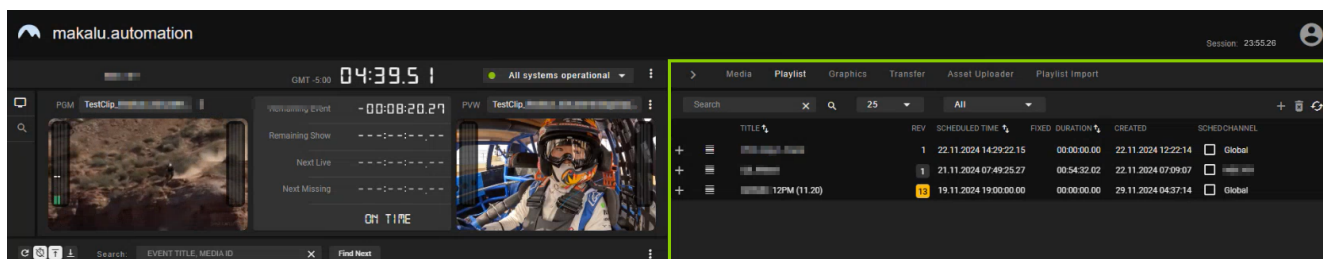
TITLE	REV	SCHEDULED TIME	FIXED	DURATION	CREATED	SCHED CHANNEL
[REDACTED]	1	22.11.2024 14:29:22.15	00:00:00.00	22.11.2024 12:22:14	Global	
[REDACTED]	1	21.11.2024 07:49:25.27	00:54:32.02	22.11.2024 07:09:07	[REDACTED]	
[REDACTED] 12PM (11.20)	13	19.11.2024 19:00:00.00	00:00:00.00	29.11.2024 04:37:14	Global	

*Automation - Playlist update available*

To update a playlist via the quick update function, proceed as follows:

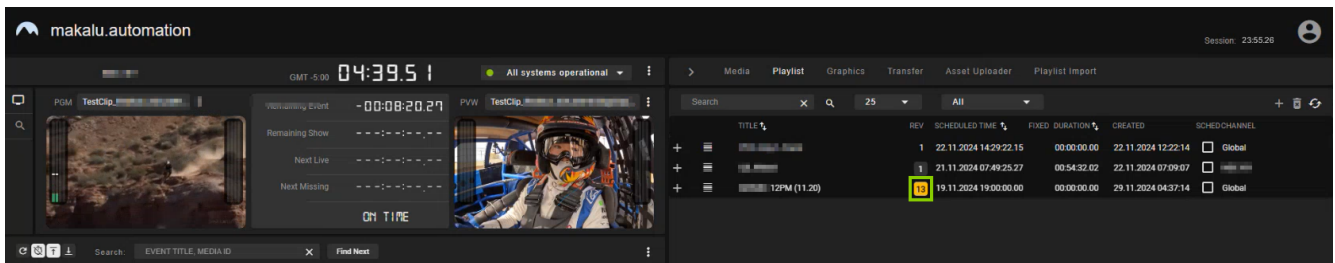
- On the right side select the **Playlist** tab.

*All available playlists are listed.*



*Automation - Playlist tab*

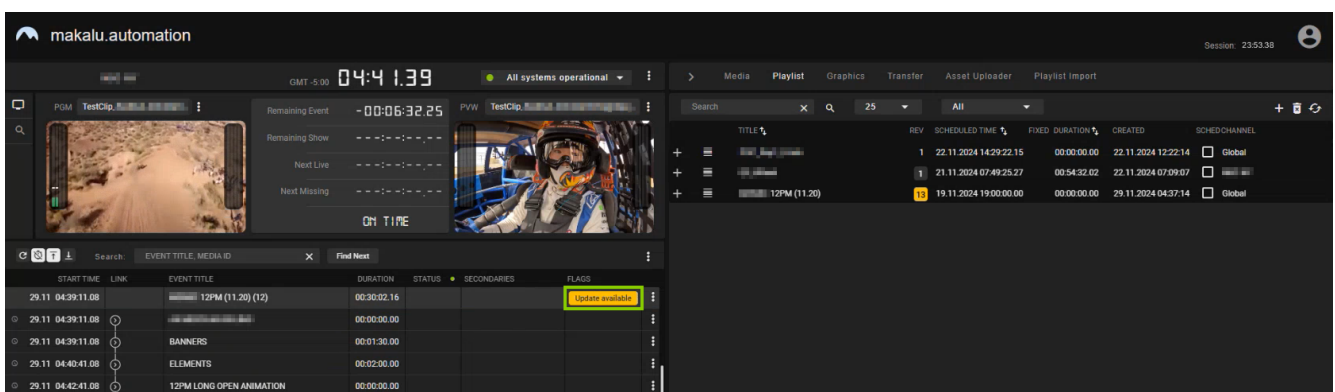
- To jump to the corresponding position of the playlist in the rundown, click the highlighted revision number of the playlist to be updated.



Automation - Jump to playlist

The rundown jumps/scrolls to the position of the playlist. The **Update available** button is displayed in the **Flags** column.

- Click the **Update available** button.



Automation - Start update

A confirmation dialog is displayed, showing the revision number of the playlist that is currently used in the rundown and the new revision number to which it will be updated.

- Confirm the update, by clicking **Yes**.


The playlist in the rundown is updated to the latest available version.

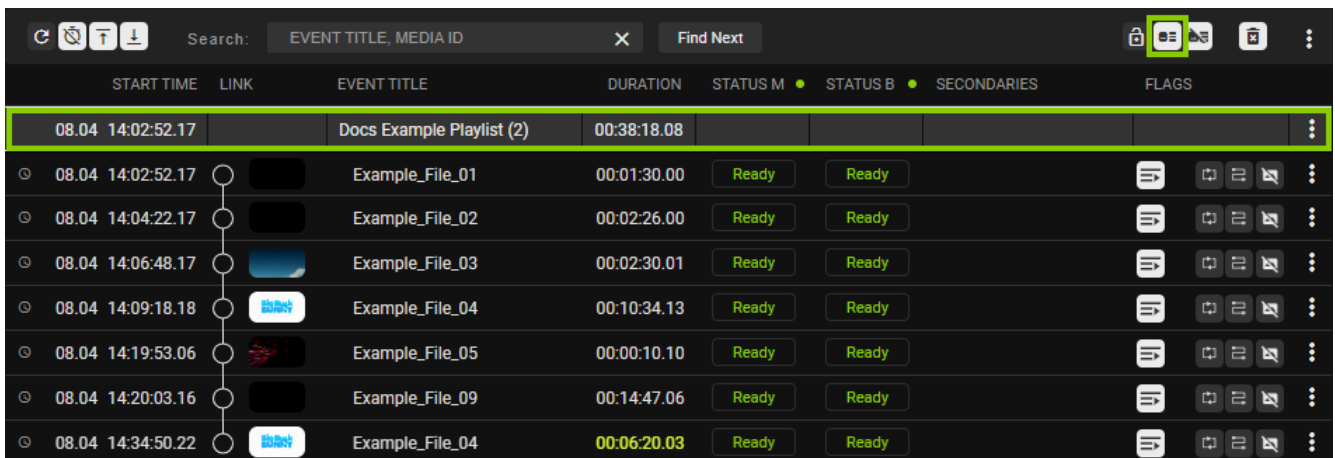
#### ASSIGNING OR REMOVING THE DEFAULT GRAPHIC

##### **Notice**

The default graphic is part of the Makalu system configuration. It is usually defined when the system is first set up and cannot be changed by the user afterward. To request a change of the default graphic, please contact [support.stream@qvest.com](mailto:support.stream@qvest.com).

To assign the default graphic to a playlist, show, or clip, proceed as follows:

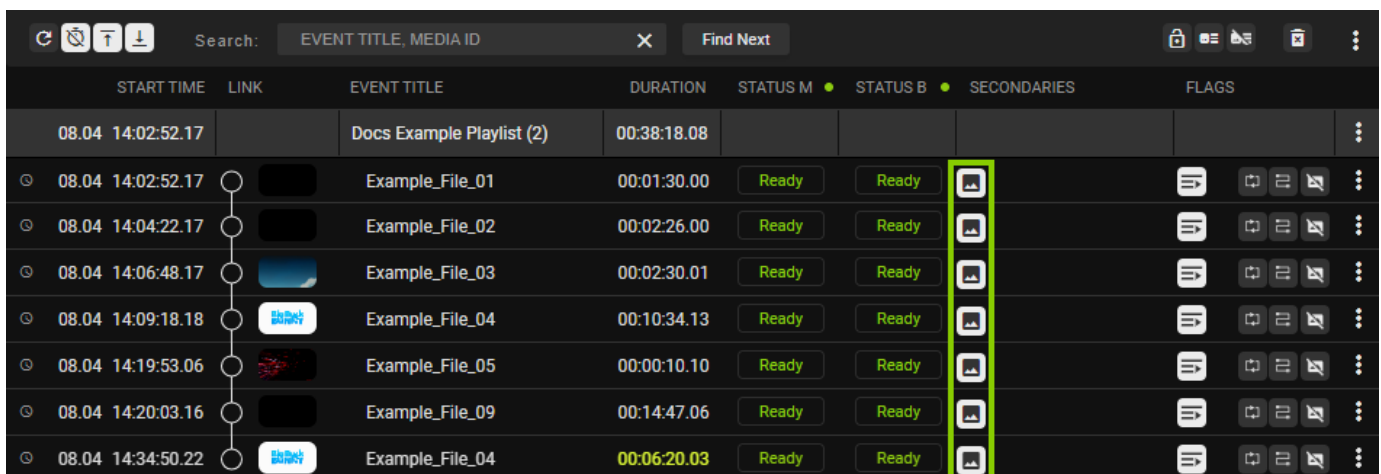
- In the rundown select a playlist, show, or clip.
- Click the **Add default graphic** icon  in the toolbar above the rundown list.



START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 14:02:52.17		Docs Example Playlist (2)	00:38:18.08				
08.04 14:02:52.17		Example_File_01	00:01:30.00	Ready	Ready		
08.04 14:04:22.17		Example_File_02	00:02:26.00	Ready	Ready		
08.04 14:06:48.17		Example_File_03	00:02:30.01	Ready	Ready		
08.04 14:09:18.18		Example_File_04	00:10:34.13	Ready	Ready		
08.04 14:19:53.06		Example_File_05	00:00:10.10	Ready	Ready		
08.04 14:20:03.16		Example_File_09	00:14:47.06	Ready	Ready		
08.04 14:34:50.22		Example_File_04	00:06:20.03	Ready	Ready		

#### Automation - Assign the default graphic


The default graphic is assigned to the selected element(s), which is recognizable by the corresponding icon in the **Secondaries** column.



START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 14:02:52.17		Docs Example Playlist (2)	00:38:18.08				
08.04 14:02:52.17		Example_File_01	00:01:30.00	Ready	Ready		
08.04 14:04:22.17		Example_File_02	00:02:26.00	Ready	Ready		
08.04 14:06:48.17		Example_File_03	00:02:30.01	Ready	Ready		
08.04 14:09:18.18		Example_File_04	00:10:34.13	Ready	Ready		
08.04 14:19:53.06		Example_File_05	00:00:10.10	Ready	Ready		
08.04 14:20:03.16		Example_File_09	00:14:47.06	Ready	Ready		
08.04 14:34:50.22		Example_File_04	00:06:20.03	Ready	Ready		

#### Automation - Default graphic assigned

To remove the default graphic from a playlist, show, or clip, proceed as follows:

1. In the rundown select a playlist, show, or clip to which the default graphic is assigned.
2. Click the **Delete default graphic** icon .

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 14:02:52.17		Docs Example Playlist (2)	00:38:18.08				
08.04 14:02:52.17		Example_File_01	00:01:30.00	Ready	Ready		
08.04 14:04:22.17		Example_File_02	00:02:26.00	Ready	Ready		
08.04 14:06:48.17		Example_File_03	00:02:30.01	Ready	Ready		
08.04 14:09:18.18		Example_File_04	00:10:34.13	Ready	Ready		
08.04 14:19:53.06		Example_File_05	00:00:10.10	Ready	Ready		
08.04 14:20:03.16		Example_File_09	00:14:47.06	Ready	Ready		
08.04 14:34:50.22		Example_File_04	00:06:20.03	Ready	Ready		

Automation - Remove default graphic

3. Confirm the following dialog, by clicking **Yes**.

The default graphic is removed from the selected element(s).

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 14:02:52.17		Docs Example Playlist (2)	00:38:18.08				
08.04 14:02:52.17		Example_File_01	00:01:30.00	Ready	Ready		
08.04 14:04:22.17		Example_File_02	00:02:26.00	Ready	Ready		
08.04 14:06:48.17		Example_File_03	00:02:30.01	Ready	Ready		
08.04 14:09:18.18		Example_File_04	00:10:34.13	Ready	Ready		
08.04 14:19:53.06		Example_File_05	00:00:10.10	Ready	Ready		
08.04 14:20:03.16		Example_File_09	00:14:47.06	Ready	Ready		
08.04 14:34:50.22		Example_File_04	00:06:20.03	Ready	Ready		

Automation - Default graphic removed

#### ADDING OR REMOVING A RECORDING SECONDARY EVENT

For information about how to use recording secondary events, see section [Recording](#).

#### ADDING OR REMOVING A SPLICING SECONDARY EVENT

For information about how to use splicing secondary events, see section [Ad triggering](#).

#### DELETING A CLIP OR A PLAYLIST


##### **Notice**

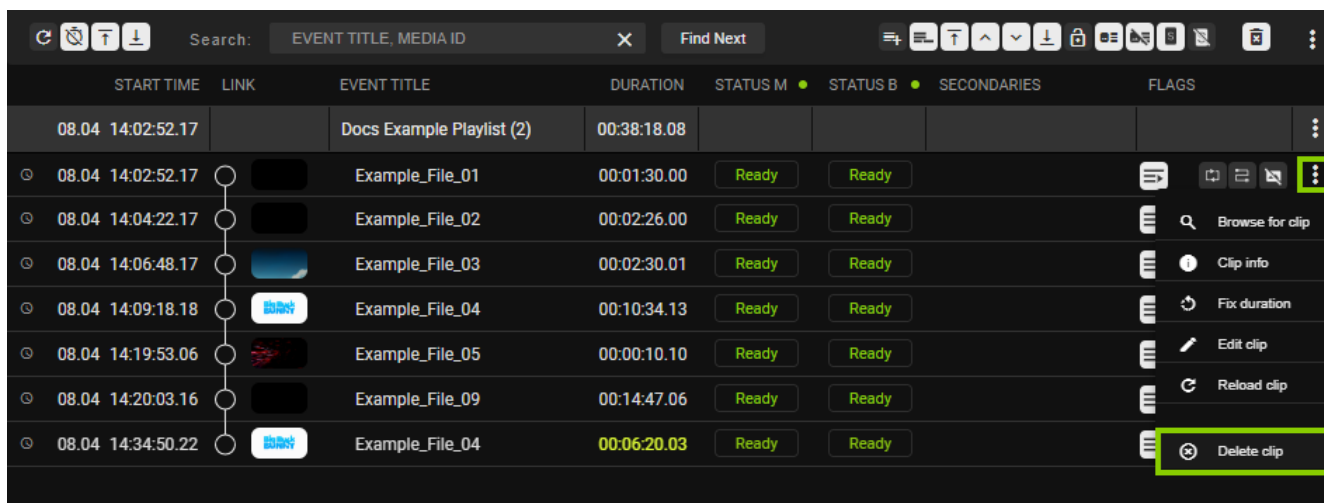
You can only delete a clip if it is in status **Ready** or if it is a placeholder. You cannot delete a clip if it is cued or on-air.

The same applies to playlists and shows. You can only delete a playlist or a show if no clip in the playlist or show is cued or on-air.

To delete a clip from the rundown, proceed as follows:



1. Select the clip to be deleted, by clicking the **Options** icon  and select **Delete clip**.




Automation - Delete a clip


2. Confirm the following dialog, by clicking **Yes**.

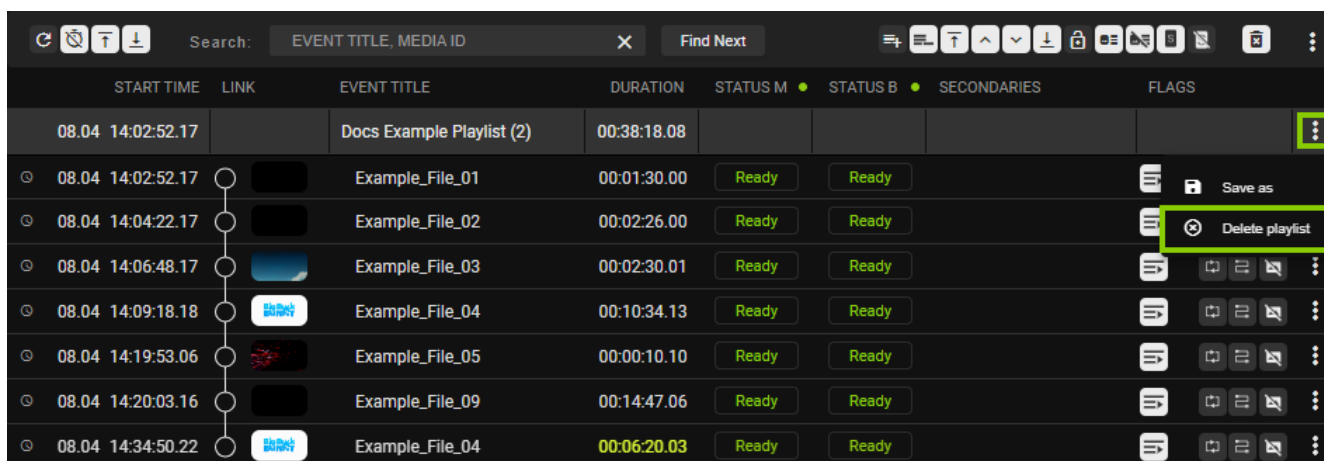
The clip is deleted.

To remove a playlist from the rundown, proceed as follows:

#### Notice

Playlists can only be removed if they are displayed in the rundown. To display playlists click the **Options** icon  in the toolbar above the rundown list and select **Show playlists**.

1. Select the playlist to be removed, by clicking the **Options** icon  and select **Delete playlist**.




Automation - Remove a playlist

2. Confirm the following dialog, by clicking **Yes**.

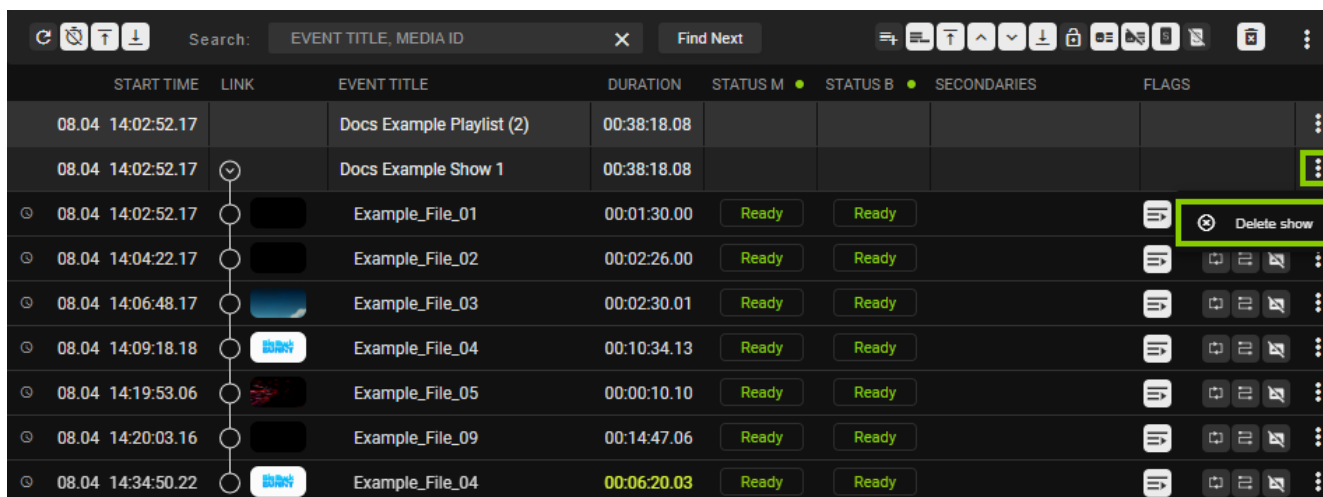
The playlist is removed.

### Tip

You can remove multiple playlists, by selecting the playlists to be removed. Then click the **Options** icon  in the toolbar above the rundown list and select **Delete playlists**.

To delete a show from the rundown, proceed as follows:

1. Select the show to be deleted, by clicking the **Options** icon  and select **Delete show**.




Automation - Delete a show

2. Confirm the following dialog, by clicking **Yes**.

*The show is deleted.*

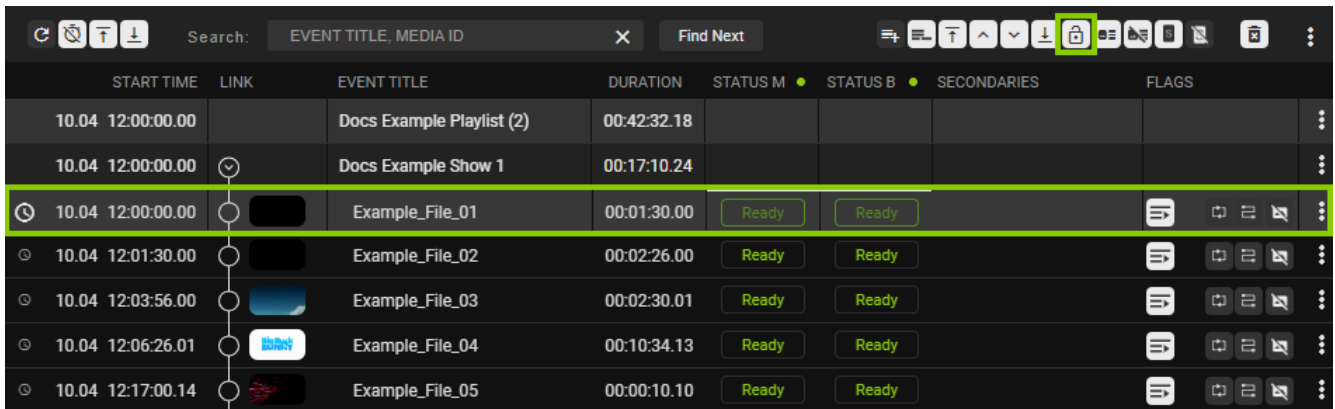
#### DELETING A FIXED START TIME






To delete a fixed start time of a show in a rundown, proceed as follows:

1. In the rundown expand the show with the fixed start time to be removed, by clicking the corresponding **Expand** icon  in the link column.

*The show is expanded, and all included clips are listed.*

2. Select the first clip of the show.
3. Click the **Delete fix start time** icon  in the toolbar above the rundown list.



START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
10.04 12:00:00.00		Docs Example Playlist (2)	00:42:32.18				
10.04 12:00:00.00		Docs Example Show 1	00:17:10.24				
 10.04 12:00:00.00		Example_File_01	00:01:30.00	Ready	Ready		
 10.04 12:01:30.00		Example_File_02	00:02:26.00	Ready	Ready		
 10.04 12:03:56.00		Example_File_03	00:02:30.01	Ready	Ready		
 10.04 12:06:26.01		Example_File_04	00:10:34.13	Ready	Ready		
 10.04 12:17:00.14		Example_File_05	00:00:10.10	Ready	Ready		

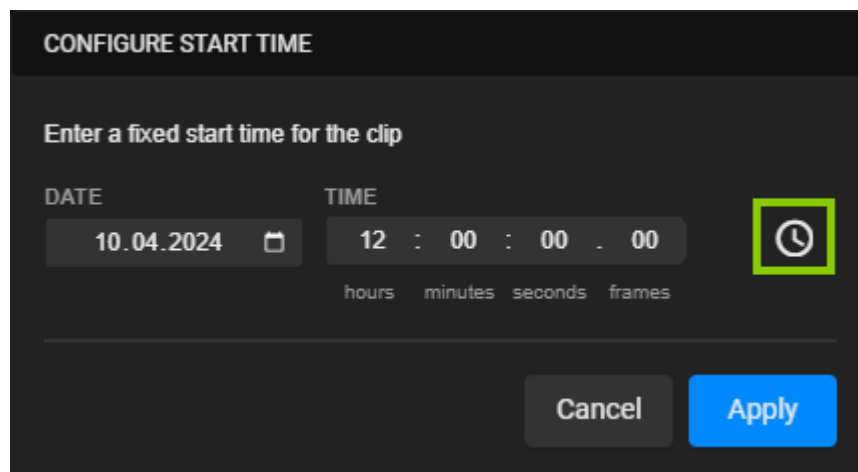
Automation - Delete fixed start time

The fixed start time is removed from the selected element. The clock icon in the first column changes from white to gray .

### Tip

Alternatively, you can delete a fixed start time via the **Configure start time** menu as follows:

1. Click the **Clock** icon to the left of the start time of the corresponding clip to disable it.  
*The **Configure start time** menu opens.*
2. In this menu click the clock icon on the right side.



Automation - Delete fixed start time (alternative way)

3. Confirm your action, by clicking **Apply**.

The fixed start time is removed. The corresponding clip or show is moved and placed directly after the previous element in the rundown with a specific time (if available). This automatically closes any gaps.

## RELOADING THE RUNDOWN

**Notice**

Manually reloading the rundown is only necessary in case of an error, for example, if the clip status is displayed as "Unknown".

To manually reload the rundown, click the **Reload rundown** icon  in the toolbar on the left above the rundown list.

## Various functions

### PREVIEWING MEDIA ASSETS


#### Info

Only file-based media assets and live sources can be previewed. Placeholders can only be opened in the preview to display their metadata. Secondary events cannot be previewed.

To preview a media asset, proceed as follows:

1. On the right side, select the **Media** tab.
2. In the media asset list select the media type (live or clips) and the corresponding source folder that contains the media asset to be previewed.
3. (Optional) To filter the displayed media assets, either use the **Search** field (to filter by file name) or the dropdown menu to filter by modification date.

*The media asset list is filtered based on your filter settings.*

4. To preview a media asset, either click the **Options** icon  at the right side of the corresponding list item and select **Preview asset** or drag the media asset on the preview player.

*The media asset is loaded by the preview player.*

The screenshot displays a video management interface. At the top, there are navigation tabs: Media, Playlist, Graphics, Recordings, Transfer (with a red triangle icon), Asset Uploader, and Playlist Import. The top right corner shows the time 19:58:40 and a user profile icon. Below the tabs is a media preview player showing a video of an underwater scene. The player has a progress bar at 1:06 / 2:30 and playback controls. To the right of the player is a metadata panel with tabs for Common, Video, Audio, and Subtitle. The 'Common' tab is active, showing fields for Media Title (Example\_File\_03), Media Id, Duration (00:02:30.01), Imported (02.04.2024 15:49:03.01), Modified (03.04.2024 11:36:27.01), Expiry date (01.05.2024 01:59:59.00), Size (185.39 MB), Format (MP4), Path (Clips/Documentation/Example\_File\_03.mp4), Thumb (Clips/Documentation/Thumbnail/Example\_File\_03.png), and LowRes (Clips/Documentation/Proxy/Example\_File\_03.mp4). Below the player and metadata is a search bar and a filter dropdown set to 'No filter'. A table below shows a list of media assets with columns: MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS. The row for 'Example\_File\_03' is highlighted in blue. A green arrow points from this row to the preview player. The left sidebar shows a 'Playoutdata' menu with categories like Live, Placeholder, Secondary Events, Clips, Bumper, Commercials, Documentation, and NAB.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		▲
Example_File_06	03.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - File preview

#### Tip

Alternatively, you can also preview media assets, by dragging the corresponding clip from the rundown into the preview player. If the clip times were edited in the rundown (for example, clip start offset or duration were changed), these times are applied by the preview player as mark in and mark out.

5. Use the [preview player controls](#) to play the media asset.

**i Notice**

If you preview a live source:

- the player controls are disabled, except the stop button
- you can copy the stream URL to the clipboard by clicking the corresponding **Path** icon in the **Common** metadata section

*The preview playback starts.*

**CONTROLLING THE RUNDOWN PLAYBACK**

The rundown playback can either be triggered automatically (based on the scheduled playlist start time) or manually by using the [rundown control](#) via the buttons at the bottom left of the screen.

To manually start the playback, proceed as follows:

1. In the rundown cue a clip to prepare it for playback, by either:
  - a. clicking **Cue next** in the rundown control, or
  - b. by clicking the clip status of a clip that is in status **Ready**.

**i Notice**

If you use the first method, this either cues the first clip in the rundown (if no clip was cued before) or the next clip after the previously cued clip.

The screenshot displays the Automation interface with the following components:

- Navigation:** Media, Traffic, Automation (active), Streams.
- Header:** ELF | Ref: Main, GMT +02:00, 17:00:46, All systems operational.
- Preview Area:** Video player for 'Example\_File\_01', REC indicator, and a central timer showing 'Remaining Event - 00:00:52.07', 'Remaining Show - 00:17:02.16', 'Next Live', 'Next Missing', and 'ON TIME'.
- Search Bar:** Search: EVENT TITLE, MEDIA ID, Find Next.
- Table:**

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 17:00:09.13		Docs Example Playlist (9)	00:17:10.24				
08.04 17:00:09.13		Example_File_01	00:01:30.00	Ready	Ready		
08.04 17:01:39.13		Example_File_02	00:02:26.00	Ready	Ready		
08.04 17:04:05.13		Example_File_03	00:02:30.01	Ready	Ready		
08.04 17:06:35.14		Example_File_04	00:10:34.13	Ready	Ready		
08.04 17:17:10.02		Example_File_05	00:00:10.10	Ready	Ready		
- Control Bar:** CUE PREV, TAKE NEXT, CUE NEXT (highlighted), SYNC.
- Footer:** Drop playlists to import into the rundown, the next available time slot is 08.04.2024 17:17:20.12.

Automation - Cue a clip

The clip status changes to **Cue**.



The screenshot displays the Automation interface with the following components:

- Top Navigation:** Media, Traffic, Automation (selected), Streams.
- Status Bar:** ELF | Ref: Main, GMT +02:00, 17:01:39, All systems operational.
- Central Panel:**
  - Left: Video preview for 'Example\_File\_01'.
  - Middle: Countdown timer showing 'Remaining Event: 0', 'Remaining Show: - 00:17:02.04', 'Next Live: ---:---:---', and 'Next Missing: ---:---:---'. Status: ON TIME.
  - Right: Video preview for 'Example\_File\_01' with a progress bar at 0:00 / 1:30.
- Search Bar:** Search: EVENT TITLE, MEDIA ID. Find Next.
- Table:**

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 17:00:09.13		Docs Example Playlist (9)	00:17:10.24				
08.04 17:00:09.13		Example_File_01	00:01:30.00	Cue	Cue		
08.04 17:01:39.13		Example_File_02	00:02:26.00	Ready	Ready		
08.04 17:04:05.13		Example_File_03	00:02:30.01	Ready	Ready		
08.04 17:06:35.14		Example_File_04	00:10:34.13	Ready	Ready		
08.04 17:17:10.02		Example_File_05	00:00:10.10	Ready	Ready		
- Bottom Control Bar:**
  - Buttons: CUE PREV (⏪), TAKE NEXT (▶), CUE NEXT (⏩), SYNC (↻).
  - Message: Drop playlists to import into the rundown. the next available time slot is 08.04.2024 17:17:20.12.

Automation - Cued clip

2. To start playback, click **Take next** in the rundown control.

The screenshot displays a broadcast automation interface. At the top, there are navigation tabs for Media, Traffic, Automation (selected), and Streams. Below the tabs, the channel information is shown as 'ELF | Ref: Main' with a GMT offset of '+02:00' and a digital clock showing '17:01:39'. A status indicator shows 'All systems operational'. The main area is split into two preview windows: 'M B Example\_File\_01' on the left and 'PVW Example\_File\_01' on the right. Between them is a central control panel with 'Remaining Event' (0), 'Remaining Show' (00:17:02.04), 'Next Live' (---:---:---), and 'Next Missing' (---:---:---), along with an 'ON TIME' indicator. Below the preview windows is a search bar with 'EVENT TITLE, MEDIA ID' and a 'Find Next' button. The main part of the interface is a playlist table:

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 17:00:09.13		Docs Example Playlist (9)	00:17:10.24				
08.04 17:00:09.13		Example_File_01	00:01:30.00	Cue	Cue		
08.04 17:01:39.13		Example_File_02	00:02:26.00	Ready	Ready		
08.04 17:04:05.13		Example_File_03	00:02:30.01	Ready	Ready		
08.04 17:06:35.14		Example_File_04	00:10:34.13	Ready	Ready		
08.04 17:17:10.02		Example_File_05	00:00:10.10	Ready	Ready		

At the bottom, there is a control panel with buttons: 'CUE PREV' (left arrow), 'TAKE NEXT' (right arrow, highlighted with a green box), 'CUE NEXT' (right arrow), and 'SYNC' (refresh icon). To the right of these buttons, a message reads: 'Drop playlists to import into the rundown the next available time slot is 08.04.2024 17:17:20.12'.


Automation - Play a clip

The clip is played. The clip status changes to **On Air**.

Media
Traffic
Automation
Streams

ELF | Ref: Main
GMT +02:00
17:02:04
● All systems operational

M B Example\_File\_01 REC



Remaining Event - 00:01:23.19

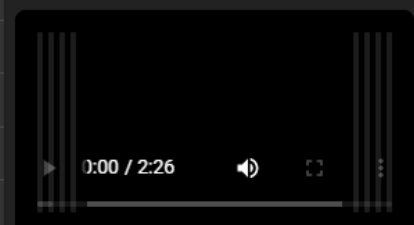
Remaining Show - 00:17:04.23

Next Live ---:---:---

Next Missing ---:---:---

ON TIME

PVW Example\_File\_02



Search:  Find Next

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 17:01:57.11		Docs Example Playlist (9)	00:17:10.24				
08.04 17:01:57.11		Example_File_01	- 00:01:23	OnAir	OnAir		
08.04 17:03:27.11		Example_File_02	00:02:26.00	Cue	Cue		
08.04 17:05:53.11		Example_File_03	00:02:30.01	Ready	Ready		
08.04 17:08:23.12		Example_File_04	00:10:34.13	Ready	Ready		
08.04 17:18:58.00		Example_File_05	00:00:10.10	Ready	Ready		

CUE PREV  
⏪

TAKE NEXT  
▶

CUE NEXT  
⏩

SYNC  
↻

Drop playlists to import into the rundown

the next available time slot is 08.04.2024 17:19:08.10


Automation - Clip is playing

 **Tip**

If the **Auto Follow** flag of the following clip is enabled, the following clip is automatically cued. Alternatively, you can cue any other clip (that is in status **Ready**), by either clicking the clip status or **Cue next**.

To manually stop the playback of the current clip and start the playback of the next cued clip, click **Take next** in the rundown control. This is required if, for example, a clip of type **live source** is currently playing with the clip flag **Open End** enabled. Because of the flag, the clip is playing permanently. The playback stops only when you manually cue the next clip to be played and click **Take next**.

3. To manually stop playback, click **Stop** in the rundown control.

 **Notice**

The **Stop** button is hidden by default. To display it, click the **Show controls icon**  at the bottom right of the screen.

4. Confirm the dialog by clicking **Yes**.

*The playback is stopped. The clip status changes to **Ready**.*

Media Traffic Automation Streams

ELF | Ref: Main GMT +02:00 17:02:57 All systems operational

M B Example\_File\_01 REC PVW Example\_File\_02

Remaining Event - 00:00:28.08  
 Remaining Show - 00:16:27.06  
 Next Live ---:---:---  
 Next Missing ---:---:---  
 ON TIME

0:00 / 2:26

Search: EVENT TITLE, MEDIA ID Find Next


START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
08.04 17:01:57.11		Docs Example Playlist (9)	00:17:10.24				
08.04 17:01:57.11		Example_File_01	00:01:30.00	Ready	Ready		
08.04 17:03:27.11		Example_File_02	00:02:26.00	Cue	Cue		
08.04 17:05:53.11		Example_File_03	00:02:30.01	Ready	Ready		
08.04 17:08:23.12		Example_File_04	00:10:34.13	Ready	Ready		
08.04 17:18:58.00		Example_File_05	00:00:10.10	Ready	Ready		

CUE PREV TAKE NEXT CUE NEXT SYNC

Drop playlists to import into the rundown  
 the next available time slot is 08.04.2024 17:19:08.10

Automation - Playback stopped

**Notice**

If you manually stop playback, the previously cued clip remains cued. To eject the player (setting it to idle) and reset the status of all clips (setting all available clips to status **Ready**), click the **Eject player** icon  in the **rundown control** via the buttons at the bottom left of the screen and confirm the following dialog by clicking **Yes**.

## FILE TRANSFER

As described in section [Ingest](#), all media files to be played are initially uploaded to the ingest storage. Afterward, each file, that is used in a rundown, must be copied to all playout nodes that are assigned to the corresponding channel.

**Notice**

If a file is already present on the local playout node storage and the file transfer is triggered again (for example, when the file processing is triggered again manually), the file is overwritten on the local playout node storage if it is not currently on-air.

The file transfer between ingest and playout storage can be triggered in the following ways:

- [add a new playlist to the rundown](#), which automatically triggers transfers for all used files that are not yet available on the playout nodes
- [add a media file to an existing show in a playlist in the rundown](#), which automatically triggers transfers for all used files that are not yet available on the playout nodes
- [trigger a file transfer manually](#) via the media asset list (either via the [Media](#) tab or [Transfer](#) tab)
- [trigger file processing manually \(which afterward triggers the file transfer\)](#) via the [media asset list](#)

The file transfer status (that indicates if a file is already available on all related playout nodes) is recognizable by colored bars in the media asset list:

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_01	03.04.2024	00:01:30.00		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_06	03.04.2024	00:00:10.18		▲
Example_File_07	03.04.2024	00:00:10.10		▲
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_09	03.04.2024	00:14:47.06		✓

Automation - File transfer status

1. Green bar - the file transfer is completed, the file is already available on the playout nodes
2. Black bar - the file is only available on the ingest storage but not available on the playout nodes


A list of all currently running and recent file transfers is available in the [Transfer](#) tab.

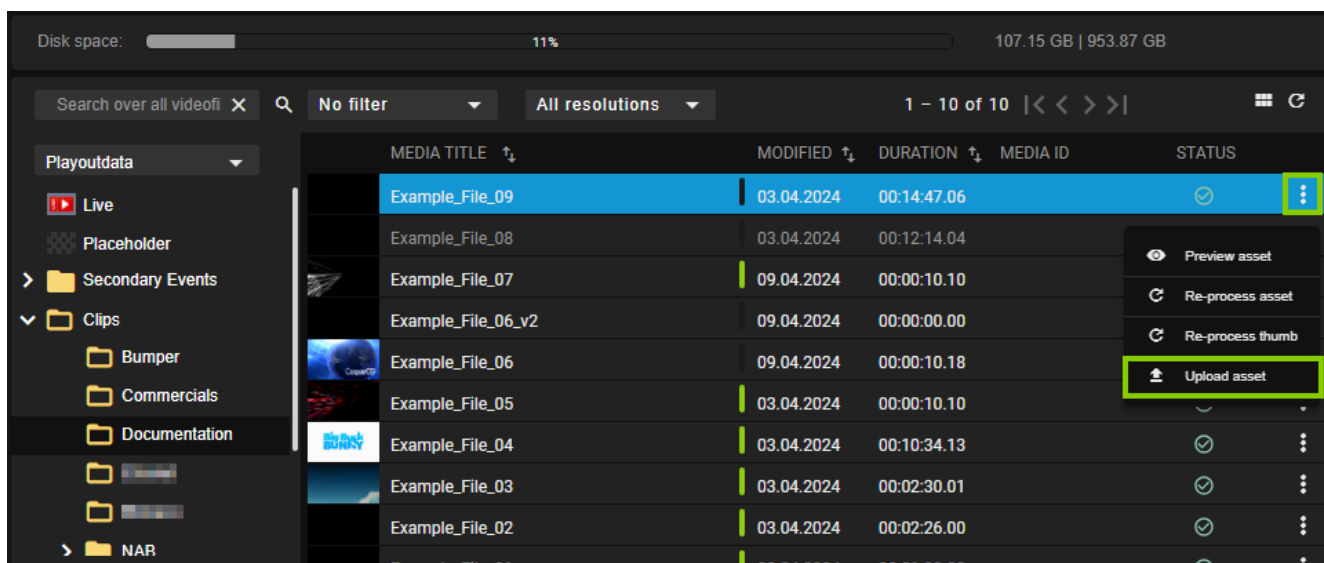
**Notice**

The number of file transfers running at the same time is configurable and set by default to five parallel file transfers.

Triggering a file transfer manually

To trigger a file transfer from ingest storage to playout nodes manually, proceed as follows:

1. Select the **Media** tab or the **Transfer** tab.
2. In the **Source** dropdown menu select the ingest storage (usually named **Playoutdata**).
3. Select a folder that contains a file that is not available on playout nodes (indicated by a black bar to the left of the file modified date).
4. Select the file to be transferred.
5. Click the **Options** icon  at the right side of the corresponding list item and select **Upload asset**.



*Automation - Start file transfer*

6. Confirm the dialog by clicking **Yes**.  
*The transfer of the selected file starts.*
7. Select the **Transfer** tab to view the file transfer progress.

The screenshot displays a video management interface with a top navigation bar including 'Media', 'Playlist', 'Graphics', 'Recordings', 'Transfer', 'Asset Uploader', and 'Playlist Import'. The 'Transfer' tab is active, showing a sub-tab 'File processing'. Below this is a table with columns: MEDIA TITLE, MEDIA ID, TARGET FOLDER, UPLOADED, STATUS, and ACTION. The table contains several rows, with 'Example\_File\_09' highlighted in green. Below the table, there is a 'Disk space' indicator showing 11% usage (107.61 GB / 953.87 GB). At the bottom, there is a search bar and a list of media items with columns: MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS. The 'Example\_File\_09' row in this list is also highlighted in green.

MEDIA TITLE	MEDIA ID	TARGET FOLDER	UPLOADED	STATUS	ACTION
Example_File_09		Clips/Documentation	09.04.2024 09:25:44	Processing 43% 466.15 MB   1.06 GB	⌂ ↻
		Clips/Commercials	09.04.2024 09:22:47	Completed 100% 144.69 MB   144.69 MB	⌂ ↻
Example_File_03		Clips/Documentation	09.04.2024 09:17:39	Completed 100% 185.39 MB   185.39 MB	⌂ ↻
Example_File_02		Clips/Documentation	09.04.2024 09:17:32	Completed 100% 176.33 MB   176.33 MB	⌂ ↻
Example_File_01		Clips/Documentation	09.04.2024 09:17:19	Completed 100% 102.43 MB   102.43 MB	⌂ ↻
		Clips/Bumper	09.04.2024 09:04:33	Completed 100% 62.87 MB   62.87 MB	⌂ ↻
		Clips/Bumper	09.04.2024 09:00:48	Completed 100% 28.12 MB   28.12 MB	⌂ ↻
		Clips/Bumper	09.04.2024 08:56:55	Completed 100% 98.23 MB   98.23 MB	⌂ ↻

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓

Automation - File transfer started

The file transfer to the playout nodes is completed. This is also indicated by a green bar to the left of the file modified date.



The screenshot shows the 'Transfer' tab in the software interface. At the top, there are navigation tabs: Media, Playlist, Graphics, Recordings, **Transfer** (with a red triangle), Asset Uploader, and Playlist Import. A timer shows 01:23:52. Below the navigation is a sub-menu with 'Main', 'Backup', and 'File processing' (with a red triangle). The main area displays a table of media files with columns: MEDIA TITLE, MEDIA ID, TARGET FOLDER, UPLOADED, STATUS, and ACTION. The table lists several files, all with a 'Completed' status and 100% progress. The first row, 'Example\_File\_09', is highlighted with a green border. Below the table, a 'Disk space' indicator shows 11% usage (108.21 GB / 953.87 GB). At the bottom, there is a search bar and a secondary table with columns: MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS. The first row in this table, 'Example\_File\_09', is also highlighted with a green border.

MEDIA TITLE	MEDIA ID	TARGET FOLDER	UPLOADED	STATUS	ACTION
Example_File_09		Clips/Documentation	09.04.2024 09:25:57	Completed	100% 1.06 GB   1.06 GB
		Clips/Commercials	09.04.2024 09:22:47	Completed	100% 144.69 MB   144.69 MB
Example_File_03		Clips/Documentation	09.04.2024 09:17:39	Completed	100% 185.39 MB   185.39 MB
Example_File_02		Clips/Documentation	09.04.2024 09:17:32	Completed	100% 176.33 MB   176.33 MB
Example_File_01		Clips/Documentation	09.04.2024 09:17:19	Completed	100% 102.43 MB   102.43 MB
		Clips/Bumper	09.04.2024 09:04:33	Completed	100% 62.87 MB   62.87 MB
		Clips/Bumper	09.04.2024 09:00:48	Completed	100% 28.12 MB   28.12 MB
		Clips/Bumper	09.04.2024 08:56:55	Completed	100% 98.23 MB   98.23 MB

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓


### Automation - File transfer completed




#### Deleting transferred files manually

#### **i** Notice

You can only delete files from a playout node, that are not currently used in the rundown.

To manually delete files from a playout node, proceed as follows:

1. Select the **Media** tab or the **Transfer** tab.
2. In the **Source** dropdown menu select the playout node (usually named **Main** or **Backup**).
3. Select the folder that contains the files to be deleted.
4. Select one or more files to be deleted.
5. In the toolbar at the top right of the media asset list click the **Delete assets** icon .

MEDIA TITLE	TRANSFER	DURATION	MEDIA ID	AGING DATE
Example_File_01	09.04.2024	00:01:30.00		16.04.2024 09:17:17.00
Example_File_02	09.04.2024	00:02:26.00		16.04.2024 09:17:28.00
Example_File_03	09.04.2024	00:02:30.01		16.04.2024 09:17:36.00
 Example_File_04	08.04.2024	00:10:34.13		15.04.2024 17:24:14.00
 Example_File_05	08.04.2024	00:00:10.10		15.04.2024 17:24:14.00
 Example_File_07	08.04.2024	00:00:10.10		15.04.2024 16:16:32.00
Example_File_09	09.04.2024	00:14:47.06		16.04.2024 09:25:38.00

#### Automation - Delete files

- Confirm the dialog by clicking **Yes**.

The selected files are deleted from the playout node storage. This is also indicated by a black bar to the left of the file transfer date.

#### Searching for and requesting missing media

Via the **Missing assets** menu, you can search the rundown for missing assets. In addition, you can export and download the missing file list as a CSV file. If Makalu is connected to an external MAM system, you can also request the transfer of missing media files from the MAM storage to the ingest storage.

**Missing assets**

Search options

Placeholder

Missing assets

Rundown-Playlists

	START TIME	END TIME	MEDIA TITLE	DURATION
<input type="checkbox"/>	08.04 17:18:00.05	09.04 15:36:49.07	ELF - October 03/4	22:18:49.03
<input type="checkbox"/>	09.04 15:36:49.08	09.04 15:36:49.07	ELF - October 02/4	00:00:00.00
<input type="checkbox"/>	09.04 15:36:49.08	09.04 23:55:17.15	ELF - October 03/4	08:18:28.08
<input checked="" type="checkbox"/>	09.04 23:55:17.16	10.04 00:52:50.08	Docs Example Playlist	00:57:32.18

Search

Missing assets (MEDIA TITLE / MEDIA ID) Search

<input checked="" type="checkbox"/> MEDIA TITLE	MEDIA ID	EVENT ID	FIRST APPEARANCE	DURATION
<input checked="" type="checkbox"/> Docs Example Placeholder	Docs_Example_...	Docs_Example_...	10.04.2024 00:12:28.15	00:00:00.00
<input checked="" type="checkbox"/> Docs Example Placeholder 2	Docs_Example_...	Docs_Example_...	10.04.2024 00:28:03.03	00:00:00.00
<input checked="" type="checkbox"/> Docs Example Placeholder 3	Docs_Example_...	Docs_Example_...	10.04.2024 00:47:50.09	00:00:00.00


Cancel Export

#### Automation - Missing assets menu

Makalu distinguishes between the following types of missing assets:

Type of missing asset	Highlight color in rundown	Description
Placeholder asset	Yellow	It is expected that the corresponding file is not present yet on the local playout storage
File-based asset	Red	The corresponding file is unexpectedly not present on the local playout storage

To search for missing assets, proceed as follows:

1. Click the **Options** icon  above the rundown and select **Show missing assets**.  
*The **Missing assets** menu opens.*
2. Under **Search options** select if you want to search for **Placeholders** and/or **Missing assets**.

3. Under **Rundown-Playlists** select one or more (if present in the rundown) playlists in which you want to search for missing assets.
4. Click **Search**.

*The search results are listed under **Missing assets**.*

5. (Optional) To search for specific missing assets based on their **Media Title** or **Media ID**, use the search field above the result list.
6. (Optional) To export and download the results as a CSV file, select the missing assets to be included and click **Export**.
7. (Optional) If Makalu is connected to an external MAM system, you can also request the transfer of missing media files from the MAM storage to the ingest storage. To do this, select the assets to be requested in the result list and click **Request media**.


*The selected assets are requested from the connected MAM and are transferred.*

#### FILE PROCESSING

##### Re-triggering a full file processing

As previously mentioned in section [Ingest](#), the file processing starts automatically when a file is uploaded to the central ingest storage. In some cases, it may be necessary to re-trigger the processing of a file manually. A possible reason could be, for example, if something went wrong during the initial file processing and not all required files (e.g. low-res/proxy video file, checksum, or thumbnail) could be created as expected. In this case, the corresponding media item (in the **Media** tab) or file processing job (in the **Transfer** tab under **File processing**) is marked with an error icon in the **Status** column. If you hover your mouse over this icon additional error details are displayed.

If you want to re-trigger the full file processing for a specific media asset manually via the **Media** tab, proceed as follows:

1. On the right side, select the **Media** tab.  
*All available media assets are listed in the lower right area.*
2. In the media asset list select the media type **Clips** and the source folder that contains the media asset to be re-processed.
3. Click the **Options** icon  at the right side of the corresponding list item and select **Re-process asset**.

The screenshot shows a video management interface with a sidebar on the left containing a folder tree under 'Playoutdata'. The main area displays a table of media files. The file 'Example\_File\_04' is selected, and a context menu is open over it, with the 'Re-process asset' option highlighted.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - Re-trigger file processing

- Confirm the following dialog, by clicking **Yes**.

A new file processing job is created for the selected asset. You can view the progress of the processing in the **Transfer** tab under **File processing**.

The screenshot displays the 'Transfer' tab in the video management interface. Underneath, the 'File processing' sub-tab is active. A table lists the following file processing jobs:

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example_File_04	09.04.2024 09:44:51	09.04.2024 09:44:51	Preprocess (25%)	Retry, Stop, Refresh
Example_File_06	09.04.2024 08:51:15	09.04.2024 08:53:43	Failed (Red Triangle)	Retry, Stop, Refresh
Example_File_07	09.04.2024 08:50:36	09.04.2024 08:53:22	Failed (Red Triangle)	Retry, Stop, Refresh
Example_File_06_v2	09.04.2024 08:51:16	09.04.2024 08:52:18	Failed (Red Triangle)	Retry, Stop, Refresh
[Blurred]	09.04.2024 08:51:00	09.04.2024 08:52:03	Failed (Red Triangle)	Retry, Stop, Refresh
[Blurred]	09.04.2024 08:50:35	09.04.2024 08:51:00	Failed (Red Triangle)	Retry, Stop, Refresh
Example_File_06_v2	03.04.2024 11:42:03	03.04.2024 11:43:50	Failed (Red Triangle)	Retry, Stop, Refresh
Example_File_07	03.04.2024 11:39:52	03.04.2024 11:42:06	Failed (Red Triangle)	Retry, Stop, Refresh
Example_File_06	03.04.2024 11:38:05	03.04.2024 11:41:47	Failed (Red Triangle)	Retry, Stop, Refresh


Summary: Running jobs: 1, Queue jobs: 0, Failed jobs: 10

Below the summary, a search bar and filters are visible. A second table lists media assets:

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		Failed (Red Triangle)
Example_File_06_v2	09.04.2024	00:00:00.00		Failed (Red Triangle)
Example_File_07	09.04.2024	00:00:10.10		Failed (Red Triangle)
Example_File_09	03.04.2024	00:14:47.06		Completed (Green Check)
Example_File_08	03.04.2024	00:12:14.04		Failed (Red Triangle)
Example_File_04	03.04.2024	00:10:34.13		Completed (Green Check)
Example_File_05	03.04.2024	00:00:10.10		Completed (Green Check)
Example_File_03	03.04.2024	00:02:30.01		Completed (Green Check)
Example_File_02	03.04.2024	00:02:26.00		Completed (Green Check)
Example_File_01	03.04.2024	00:01:30.00		Completed (Green Check)

#### Automation - File processing re-triggered

Alternatively, if you want to re-trigger the file processing job manually via the file processing list, proceed as follows:

1. On the right side, select the **Transfer** tab, and below select **File processing**.  
All file processing jobs that are currently running or were recently finished are displayed below.
2. In the file processing list select the job to be re-triggered and in the **Action** column click the **Retry job** icon .

The screenshot shows the 'Transfer' tab in a media management interface. The 'File processing' sub-tab is active. A table lists media assets with columns for title, created, modified, status, and action. The first row, 'Example\_File\_04', has a green refresh icon highlighted in the action column. Below the table, a summary shows 0 running jobs, 0 queue jobs, and 10 failed jobs. A search bar and a filter menu are also visible.

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example_File_04	09.04.2024 09:44:51	09.04.2024 09:48:18	✓	🔄
Example_File_05	09.04.2024 09:27:06	09.04.2024 09:30:30	✓	🔄
Example_File_06	09.04.2024 09:27:30	09.04.2024 09:30:30	✓	🔄
Example_File_07	09.04.2024 09:27:10	09.04.2024 09:29:56	✓	🔄
Example_File_08	09.04.2024 09:21:16	09.04.2024 09:25:44	✓	🔄
Example_File_09	09.04.2024 09:21:11	09.04.2024 09:25:43	✓	🔄
Example_File_10	09.04.2024 09:21:20	09.04.2024 09:25:39	✓	🔄
Example_File_11	09.04.2024 09:21:24	09.04.2024 09:24:53	✓	🔄
Example_File_12	09.04.2024 09:10:43	09.04.2024 09:12:10	✓	🔄

Running jobs: 0    Queue jobs: 0    Failed jobs: 10

Search over all videofi    No filter    All resolutions    1 - 10 of 10

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

### Automation - Re-trigger file processing


The file processing job is restarted.

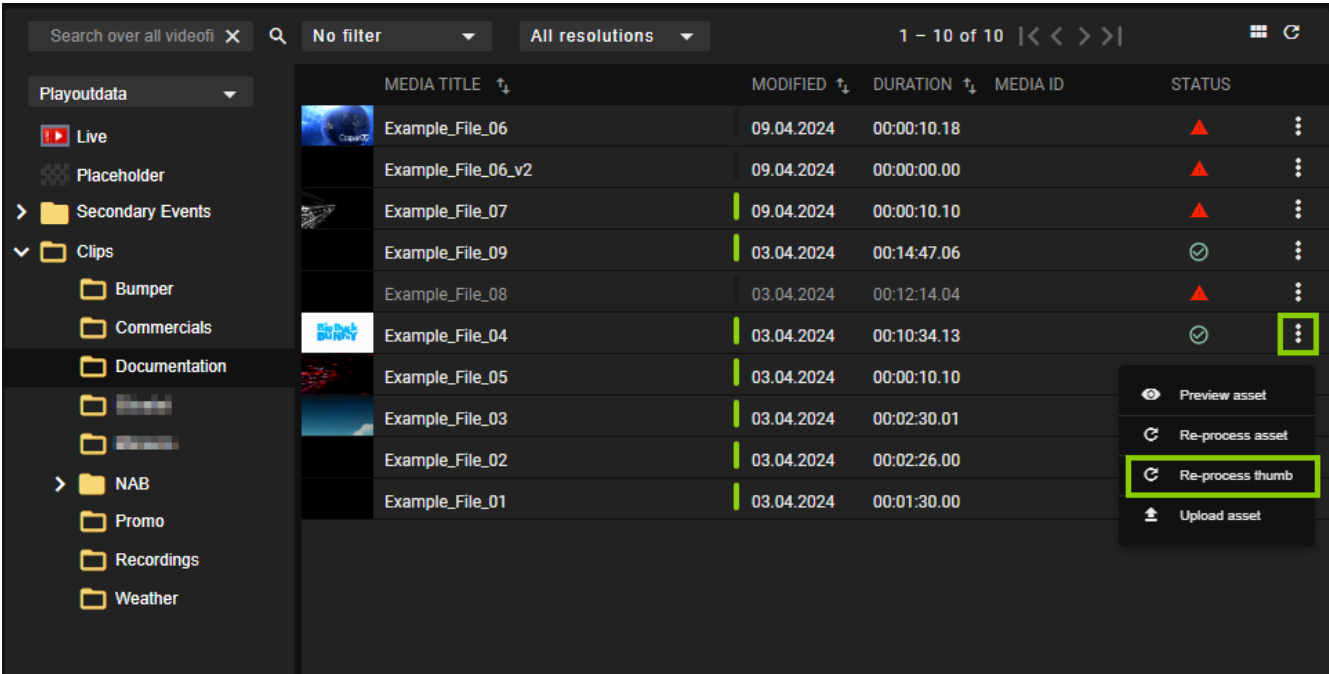
Re-triggering a file processing for selected files

Instead of re-triggering the file processing completely, you can also restrict it to selected files.

If you want to re-trigger the file processing for a thumbnail of a specific media asset manually via the **Media** tab, proceed as follows:

1. On the right side, select the **Media** tab.  
All available media assets are listed in the lower right area.
2. In the media asset list select the media type **Clips** and the source folder that contains the media asset to be re-processed.

- Click the **Options** icon  at the right side of the corresponding list item and select **Re-process thumb**.



The screenshot shows a video management interface with a table of media files. The table has columns for MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS. The 'Example\_File\_04' row is selected, and a context menu is open over it, showing options: Preview asset, Re-process asset, Re-process thumb (highlighted), and Upload asset. The 'Re-process thumb' option is highlighted with a red box.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

*Automation - Re-trigger file processing for thumbnail manually*

- Confirm the following dialog, by clicking **Yes**.

A new file processing job is created for the thumbnail of the selected asset. You can view the progress of the processing in the **Transfer** tab under **File processing**.



The screenshot displays the 'Transfer' tab in a media management interface. The 'File processing' sub-tab is active, showing a list of media files. The first row, 'Example\_File\_04', is highlighted with a green border and shows a 50% progress bar. The table below the main list shows a summary of jobs: 1 Running job, 0 Queue jobs, and 10 Failed jobs. A secondary table at the bottom lists more media files with columns for title, modified date, duration, media ID, and status.

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example_File_04	09.04.2024 09:55:18	09.04.2024 09:55:18	Process 50%	🔄 🛑 🔄
Example_File_04	09.04.2024 09:44:51	09.04.2024 09:48:18	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:27:06	09.04.2024 09:30:30	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:27:30	09.04.2024 09:30:30	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:27:10	09.04.2024 09:29:56	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:21:16	09.04.2024 09:25:44	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:21:11	09.04.2024 09:25:43	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:21:20	09.04.2024 09:25:39	🟢	🔄 🛑 🔄
Example_File_04	09.04.2024 09:21:24	09.04.2024 09:24:53	🟢	🔄 🛑 🔄

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		🔴
Example_File_06_v2	09.04.2024	00:00:00.00		🔴
Example_File_07	09.04.2024	00:00:10.10		🔴
Example_File_09	03.04.2024	00:14:47.06		🟢
Example_File_08	03.04.2024	00:12:14.04		🔴
Example_File_04	03.04.2024	00:10:34.13		🟢
Example_File_05	03.04.2024	00:00:10.10		🟢
Example_File_03	03.04.2024	00:02:30.01		🟢
Example_File_02	03.04.2024	00:02:26.00		🟢
Example_File_01	03.04.2024	00:01:30.00		🟢

#### Automation - File processing for thumbnail re-triggered

To re-trigger the file processing for selected file types (checksum, low-res proxy, and/or thumbnail) manually via the file processing list, proceed as follows:

1. On the right side, select the **Transfer** tab, and below select **File processing**.  
All file processing jobs that are currently running or were recently finished are displayed below.
2. In the file processing list select the job to be re-triggered and in the **Action** column click the **Reprocess job** icon 🔄.

The screenshot displays a video management interface. At the top, a navigation bar includes 'Media', 'Playlist', 'Graphics', 'Recordings', 'Transfer' (highlighted with a green box), 'Asset Uploader', and 'Playlist Import'. Below this, a sub-menu shows 'Main', 'Backup', and 'File processing' (also highlighted with a green box). A dropdown menu is set to 'Created, Completed, Failed, Running'. The main content area features a table with the following columns: MEDIA TITLE / FILENAME, CREATED, MODIFIED, STATUS, and ACTION. The first row of the table is highlighted, and its 'ACTION' column contains a refresh icon, which is also highlighted with a green box. Below the table, a summary shows 'Running jobs: 0', 'Queue jobs: 0', and 'Failed jobs: 10'. A search bar and filters are present, including 'No filter' and 'All resolutions'. A sidebar on the left shows a file tree with categories like 'Live', 'Placeholder', 'Secondary Events', 'Clips', 'Bumper', 'Commercials', 'Documentation', 'NAB', 'Promo', 'Recordings', and 'Weather'. The main table below the sidebar lists media files with columns for MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS.

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example_File_04	09.04.2024 09:55:18	09.04.2024 09:56:18	✓	Refresh
Example_File_04	09.04.2024 09:44:51	09.04.2024 09:48:18	✓	Refresh
Example_File_04	09.04.2024 09:27:06	09.04.2024 09:30:30	✓	Refresh
Example_File_04	09.04.2024 09:27:30	09.04.2024 09:30:30	✓	Refresh
Example_File_04	09.04.2024 09:27:10	09.04.2024 09:29:56	✓	Refresh
Example_File_04	09.04.2024 09:21:16	09.04.2024 09:25:44	✓	Refresh
Example_File_04	09.04.2024 09:21:11	09.04.2024 09:25:43	✓	Refresh
Example_File_04	09.04.2024 09:21:20	09.04.2024 09:25:39	✓	Refresh
Example_File_04	09.04.2024 09:21:24	09.04.2024 09:24:53	✓	Refresh

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

*Automation - Re-trigger file processing for selected files manually*

3. In the following dialog select the file types to be re-processed (checksum, low-res proxy, and/or thumbnail).
4. Confirm your selection, by clicking **Apply**.

*The file processing is triggered again for the selected file types.*

The screenshot displays the Makalu interface with the 'Transfer' menu highlighted. Underneath, the 'File processing' sub-menu is active. A table shows a list of media files with the following columns: MEDIA TITLE / FILENAME, CREATED, MODIFIED, STATUS, and ACTION. The first row, 'Example\_File\_04', is highlighted with a green border and shows a 50% progress bar. Below the table, a sidebar on the left shows a file tree with 'Clips' expanded. To the right of the sidebar, another table lists media files with columns: MEDIA TITLE, MODIFIED, DURATION, MEDIA ID, and STATUS.

MEDIA TITLE / FILENAME	CREATED	MODIFIED	STATUS	ACTION
Example_File_04	09.04.2024 10:00:34	09.04.2024 10:00:34	Process 50%	↺ ⏸ ↻
Example_File_04	09.04.2024 09:55:18	09.04.2024 09:56:18	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:44:51	09.04.2024 09:48:18	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:27:06	09.04.2024 09:30:30	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:27:30	09.04.2024 09:30:30	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:27:10	09.04.2024 09:29:56	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:21:16	09.04.2024 09:25:44	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:21:11	09.04.2024 09:25:43	✓	↺ ⏸ ↻
Example_File_04	09.04.2024 09:21:20	09.04.2024 09:25:30	✓	↺ ⏸ ↻

Running jobs: 1    Queue jobs: 0    Failed jobs: 10

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_06	09.04.2024	00:00:10.18		▲
Example_File_06_v2	09.04.2024	00:00:00.00		▲
Example_File_07	09.04.2024	00:00:10.10		▲
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

*Automation - File processing for selected files re-triggered manually*

#### IMPORTING A PLAYLIST

##### **Notice**

Makalu supports the import of XML-based playlists created by Makalu or by third-party traffic systems. For further information please contact [support.stream@qvest.com](mailto:support.stream@qvest.com).

To import a playlist, proceed as follows:

1. Select the **Playlist Import** tab.
2. To add a playlist, either:
  - a. drag the playlist file on the drop zone area, or
  - b. click **select** and select the playlist file.
3. Select the target channel to which the playlist should be assigned.
4. To confirm your selection, click **Apply**.
5. Click **Process**.
 

*The content of the playlist file is checked and processed.*
6. Click **Import**.


*The playlist is imported.*

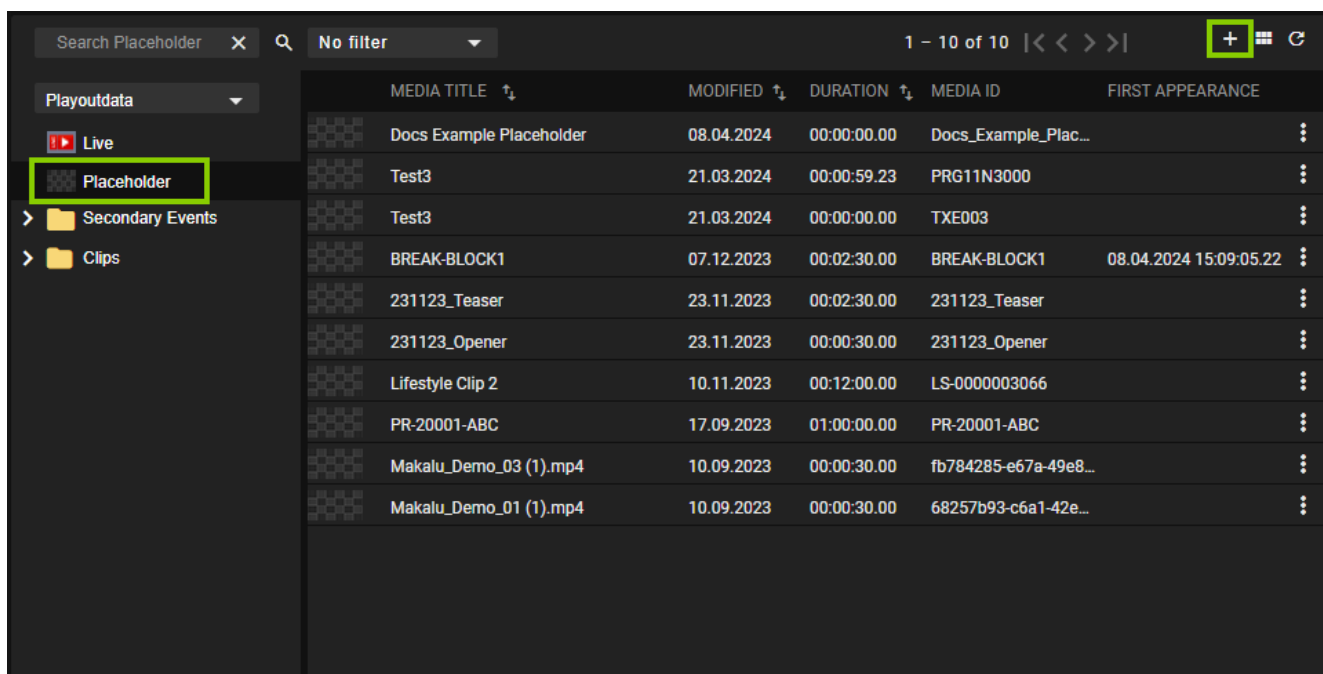
#### CREATING A PLACEHOLDER MEDIA ASSET MANUALLY

To create a placeholder media asset manually, proceed as follows:

1. Select the **Media** tab.
 

*The media asset list is displayed at the bottom right.*
2. In the media asset list select the asset type **Placeholder**.
 

*All available placeholder media assets are listed.*
3. In the toolbar above the media asset list on the right side click the **Create placeholder** icon .



#### Automation - Create placeholder

*The **Create placeholder** dialog opens.*

4. Enter the **Media Title** and **Media Id**.
5. Select the **Folder** where the corresponding media file is expected.
6. (Optional) Set the **Duration** (default: 5 minutes).

7. (Optional) Set the **Expiry date** (default: one month in the future, based on the current date).


**i Notice**

The **Expiry date** determines when a media asset/file will be deleted automatically. For more information, see section [Housekeeping](#).

8. Click **Apply**.

*The placeholder media asset is created based on the properties you selected. It is then listed under **Placeholder** in the media asset list. You can add it to the rundown as described in section [Adding elements to the rundown](#).*

**🔥 Tip**

To edit a placeholder media asset, click the **Options** icon  at the right side of the corresponding list item and select **Edit placeholder**. Then edit the properties in the **Edit placeholder** dialog and confirm your changes, by clicking **Apply**.

Note that your changes do not automatically affect existing occurrences of the placeholder in the rundown. To apply them, you must add the edited placeholder again to the rundown.

**EXPORTING A MISSING FILELIST**

To export a missing file list, proceed as follows:

1. Select the **Playlist Import** tab.
2. Click the **plus icon** of an imported playlist that has missing files.  
*The missing file list expands, and all missing files are listed.*
3. Click **Export**.

The screenshot shows the 'Playlist Import' interface. At the top, there are navigation tabs: Media, Playlist, Graphics, Recordings, Transfer (with a red triangle), Asset Uploader, and Playlist Import. The time is 19:55:15. Below the tabs, the 'Playlists' section is visible. It contains a table with the following columns: Title, Missing Files, Revision, Channel, Process, and Import. The table lists several playlists, each with a checkbox, a green checkmark, a title, a red number indicating missing files, a plus sign, a revision number, a channel icon, a progress bar at 100%, and an 'Import' button. A modal window is open, showing a table with columns: Name, MediaId, and LocalStoragePath. The modal contains two rows of data, both with 'Test3' in the Name column. Below the modal, there is a 'Drop or select Playlists to import them' instruction with a cloud icon.

Title	Missing Files	Revision	Channel	Process	Import
20230130_SSC...	1	+	7	Ready for import	Import
20230322_MC...	2	+	4	Ready for import	Import
20230223_NA...	2	+	4	Ready for import	Import
20230322_MC...	2	-	3	Ready for import	Import

Name	MediaId	LocalStoragePath
Test3	TXE003	...
Test3	PRG11N3000	...

### Automation - Export missing file list

The missing file list is downloaded.

#### **Notice**

Missing file lists are exported as CSV files.

#### SWITCHING THE REFERENCE PLAYER

#### **Notice**

This function is only available for redundant channels. Using it only has an effect on the display in the Makalu UI, but not on the output signal of the players.

With redundant channels, the clip status display in the rundown receives its data from the currently selected main or backup playout node. If one of the components involved (for example, Automation API) fails, the clip status data cannot be updated anymore between the player and Makalu UI.

 **Tip**

You can check the current status of all involved components (for example, Automation and VideoServer) via the [system health status indicator](#). In addition, status changes to components (for example, a component goes online/offline) are displayed automatically via corresponding notifications.

In this case, all clips used in the rundown are listed with the status "offline". However, both players (main and backup) can continue to play as long as they still have scheduled program. [Rundown and player control commands](#) (for example, Take Next, Cue Next, etc.) are still sent to both players, provided both are accessible.

To get an updated clip status display in this case, you can switch the reference player (either from main to backup or vice versa). To switch the reference player, proceed as follows:

1. At the top right click the **User** icon.
2. Depending on the currently selected reference player, either select **Switch to Backup** or **Switch to Main**.

The screenshot displays a video player interface with a detailed view of a media file. The player is currently at 1:39 / 14:47. A dropdown menu is open, showing options like 'super user', 'Build: 0.233.151', 'Open the documentation', 'Copy API Token', 'Show simple View', 'Switch to Backup' (highlighted), and 'Logout'. Below the player, there is a table of media files with columns for Media Title, Modified, Duration, Media ID, and Status. The table shows a list of files from Example\_File\_01 to Example\_File\_09.

MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Example_File_09	03.04.2024	00:14:47.06		✓
Example_File_08	03.04.2024	00:12:14.04		▲
Example_File_04	03.04.2024	00:10:34.13		✓
Example_File_07	03.04.2024	00:00:10.10		▲
Example_File_06	03.04.2024	00:00:10.18		▲
Example_File_05	03.04.2024	00:00:10.10		✓
Example_File_03	03.04.2024	00:02:30.01		✓
Example_File_02	03.04.2024	00:02:26.00		✓
Example_File_01	03.04.2024	00:01:30.00		✓

#### Automation - Switch reference player

3. Confirm your selection, by clicking **Yes**.

The reference is switched to the selected player and the clip status is updated accordingly.

#### RESTARTING THE PLAYER

##### Warning

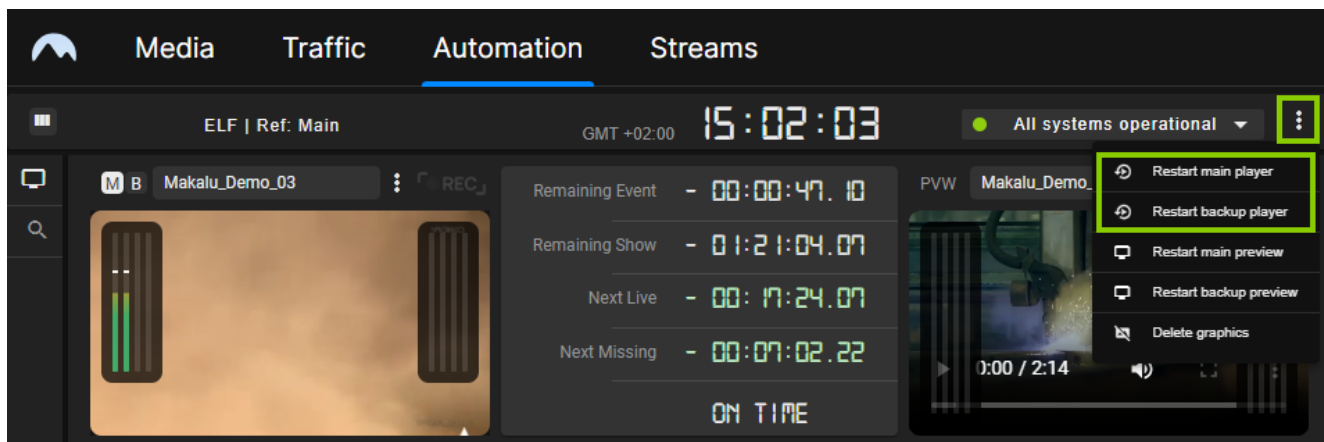
Use the channel restart trigger only in case of an emergency (for example, if a player error occurs).

Restarting the player takes a short amount of time. During this time, no output signal is generated.



To manually restart the player, proceed as follows:

1. Click the menu button to the right of the system health status indicator and select **Restart player**.



Automation - Restart player

#### **i** Notice

If the corresponding channel is redundant, the menu provides you with the option to restart the main and backup player separately.

*A dialog is displayed that asks you to confirm this action.*

2. Confirm the dialog, by clicking **Yes**.

*The player is restarted.*

#### CHANGING AN AUDIO MAPPING SCHEME

For information about how to change an audio mapping scheme, see the following sections in chapter [Audio mapping](#):

- [Using audio mapping for short-term planning](#)
- [Using audio mapping for live/on the fly changes](#)

## 2.5 Live sources and stream targets

Each incoming live stream or feed received by Makalu is referred to as a **live source**. Makalu distinguishes between the following types of live sources:

- compressed signals (for example, live sources received via SRT, which are highlighted in the Makalu UI with a red thumbnail)
- uncompressed signals (for example, SDI live sources in on-premise environments, which are highlighted in the Makalu UI with a green thumbnail)

Live sources are used by multiple Makalu apps, for example, to preview incoming streams or to schedule them in a rundown. Each playout output signal can also be routed internally and used again as a live source ("backchannel"). Every live source is defined by a set of configuration properties (metadata), like, for example, the used protocol, the URL used to receive the stream, or (if required) stream credentials. These configuration properties can, for example, be used to set up an external device or software that provides an incoming source stream to Makalu.

The target for each outgoing live stream is referred to as a **stream target**. Like a live source, each stream target is defined by a set of configuration properties (metadata), like, for example, the used protocol, the target URL, or (if required) stream credentials. Stream targets can be used by multiple Makalu apps, for example, to schedule them in a rundown, defining which parts of the scheduled program should be streamed to downstream service providers or video platforms.

To manage, preview, monitor, and route incoming and outgoing live streams, Makalu includes the Stream Control app.

### 2.5.1 Accessing Makalu Stream Control

To access **Makalu Stream Control**, proceed as follows:

1. Open the Makalu Hub as described in section [Accessing the Makalu Hub](#).
2. In the app list in the left column, in section Streams select **Makalu Streams**.

*The Stream Control UI is opened in the Streams tab of the main Makalu UI.*

The screenshot shows the 'Live Sources Overview' page in the Stream Control UI. The page features a navigation sidebar on the left with options for 'Overview', 'Recording', and 'Static Routing'. The main content area displays a table of live sources with the following columns: NAME, PROTOCOL, CONNECTED, UPTIME, LIVE BITRATE, ALERTS, and Action. The table lists eight live sources, all of which are connected and have a green status indicator. The 'Live Source Limit' indicator at the bottom left shows that 3 of 8 live sources are currently in use, representing 38% of the limit.

NAME	PROTOCOL	CONNECTED	UPTIME	LIVE BITRATE	ALERTS	Action
Sales_5_PGMStream	SRT	Connected	18 days, 04:35:49	6.00 Mbps	-	[Action]
Sales_4_PGMStream	SRT	Connected	26 days, 22:15:02	6.00 Mbps	-	[Action]
Sales_3_PGMStream	SRT	Connected	26 days, 22:16:12	9.00 Mbps	-	[Action]
Sales_1_PGMStream	SRT	Connected	26 days, 22:24:01	6.00 Mbps	-	[Action]
Sales_1_BackupStream	SRT	Connected	18 days, 04:32:59	6.00 Mbps	-	[Action]
IPSec @ StreamControl	SRT	Connected	14 days, 07:51:10	10.47 Mbps	-	[Action]
IPSec @ StreamControl	RTMP	Connected	12 days, 02:34:00	3.57 Mbps	-	[Action]
IPSec @ StreamControl	SRT	Connected	00:00:25	3.98 Mbps	-	[Action]

Stream Control - UI

## 2.5.2 Manage live sources

### Using the live sources overview

To access the live sources overview, in the navigation sidebar on the left select **Live Sources > Overview**.

The live sources overview is displayed.

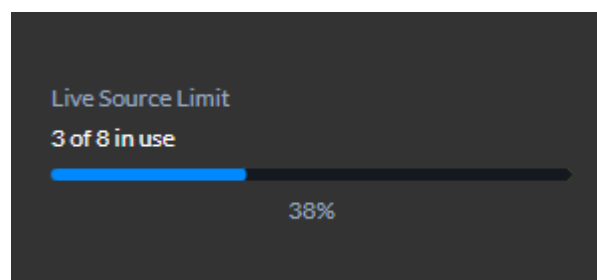
NAME	PROTOCOL	CONNECTED	UPTIME	LIVE BITRATE	ALERTS	Action
Sales_5_PGMStream	SRT	●	18 days, 04:35:49	6.00 Mbps	-	□
Sales_4_PGMStream	SRT	●	26 days, 22:15:02	6.00 Mbps	-	□
Sales_3_PGMStream	SRT	●	26 days, 22:16:12	9.00 Mbps	-	□
Sales_1_PGMStream	SRT	●	26 days, 22:24:01	6.00 Mbps	-	□
Sales_1_BackupStream	SRT	●	18 days, 04:32:59	6.00 Mbps	-	□
IPSec @ NewYork - edge1	SRT	●	14 days, 07:51:10	10.47 Mbps	-	□
IPSec @ NewYork - edge2	RTMP	●	12 days, 02:34:00	3.57 Mbps	-	□
IPSec @ NewYork	SRT	●	00:00:25	3.98 Mbps	-	□

*Stream Control - Live sources overview*

In the **Live Sources** area, all currently available live sources are listed with basic information (for example, name, protocol, connection status, uptime, live bitrate, and alerts). You can customize the columns to be displayed and manually trigger a list update, by using the corresponding buttons above the list.

To display only specific live sources, use the **Filter** area above the list. There you can, for example, search live sources by name, by status flags (connected, verified, etc.), or by protocol (RTMP, SRT, etc.).

The number of available live sources is limited. Depending on the infrastructure and the Makalu subscription, this number may vary. The total number of live sources available and current utilization is displayed at the bottom left under **Live Source Limit**:



*Stream Control - Live source limit*

### Creating a live source

To create a live source, proceed as follows:

1. In the navigation sidebar on the left select **Live Sources > Overview**.
2. In the upper right, click **Create Live Source**.

*The **Create A Live Source** dialog is displayed.*

3. Enter a name for the live source and select the protocol to be used.

Stream Control - Create live source

**Notice**

The name of the live source must be unique.

4. (Optional) Depending on the selected protocol, additional configuration properties may be displayed. Set the values as required.

**Notice**

If you select, for example, protocol **RTMP** the additional property **On connect Authenticate** is available. If you enable it the URL of the created live source (which must be used to provide the source stream to Makalu) will include a username and password for authentication.

5. Click **Confirm**.

*The live source is created and added to the live sources list. It is also available in Makalu Traffic as a primary event and can be added to shows. In Makalu Automation it is available under Media > Live and can be previewed and added to the rundown.*

**Notice**

You can now configure your device/software/encoder that provides the actual source stream by using the configuration properties of the live source you created. To do this, select the newly created live source, copy the values of the corresponding configuration properties to the clipboard, and paste them into your device/software settings. Afterward, start the stream. If everything is configured properly and the incoming stream is received correctly, the live source status changes from red (disconnected) to green (connected) and the preview can be started.

## Previewing a live source

To preview a live source, proceed as follows:

1. In the navigation sidebar on the left select **Live Sources > Overview**.
2. In the live sources list click the **name of the live source** to be previewed.  
*A preview player and detailed information about the live source are displayed at the top of the page.*
3. In the preview player click the **Play** icon.  
*The preview starts.*

The screenshot shows the 'Stream Control - Live source preview' interface. At the top, there are tabs for 'Media', 'Traffic', 'Automation', and 'Streams'. Below the tabs, there's a 'Live Sources - Overview' section with a 'Create Live Source' button. The main area is divided into two parts: a preview player on the left showing a red car, and a detailed information panel on the right for the selected source 'Sales\_5\_PGMstream'. The information panel shows the protocol as 'SRT' and the preview URL as 'https://5c9e0f63b923fstreamlock.net:443/Sal...'. Below this, there's a filter section and a table of live sources.

NAME	PROTOCOL	CONNECTED	UPTIME	LIVE BITRATE	ALERTS	Action
Sales_5_PGMstream	SRT	●	18 days, 04:33:49	6.00 Mbps	-	
Sales_4_PGMstream	SRT	●	26 days, 22:13:02	6.00 Mbps	-	
Sales_3_PGMstream	SRT	●	26 days, 22:16:12	9.00 Mbps	-	
Sales_1_PGMstream	SRT	●	26 days, 22:24:01	6.00 Mbps	-	
Sales_1_Backupstream	SRT	●	18 days, 04:32:59	6.00 Mbps	-	
IPMS_20230704_0001	SRT	●	14 days, 07:51:10	10.47 Mbps	-	
IPMS_20230704_0002	RTMP	●	12 days, 02:34:00	3.57 Mbps	-	
IPMS_20230704_0003	SRT	●	00:00:25	3.98 Mbps	-	

Stream Control - Live source preview

4. Use the player controls, for example, to trigger pause, play, or full-screen view.

## Editing a live source

### Notice

You can only edit the name of a live source. All other settings cannot be changed as they are automatically generated.

To edit a live source, proceed as follows:

1. In the navigation sidebar on the left select **Live Sources > Overview**.
2. In the live sources list click the **name of the live source** to be edited.  
*A preview player and detailed information about the live source are displayed at the top of the page.*
3. Edit the name of the live source.

4. Click **Save**.

The changed live source configuration is saved.

### Deleting a live source

To delete a live source, proceed as follows:

1. In the navigation sidebar on the left select **Live Sources > Overview**.
2. In the live sources list in the Action column activate the **checkbox of the live source to be deleted**.
3. Click the **Delete selected live source** icon above the live sources list.
4. Confirm the displayed dialog by clicking **Confirm**.

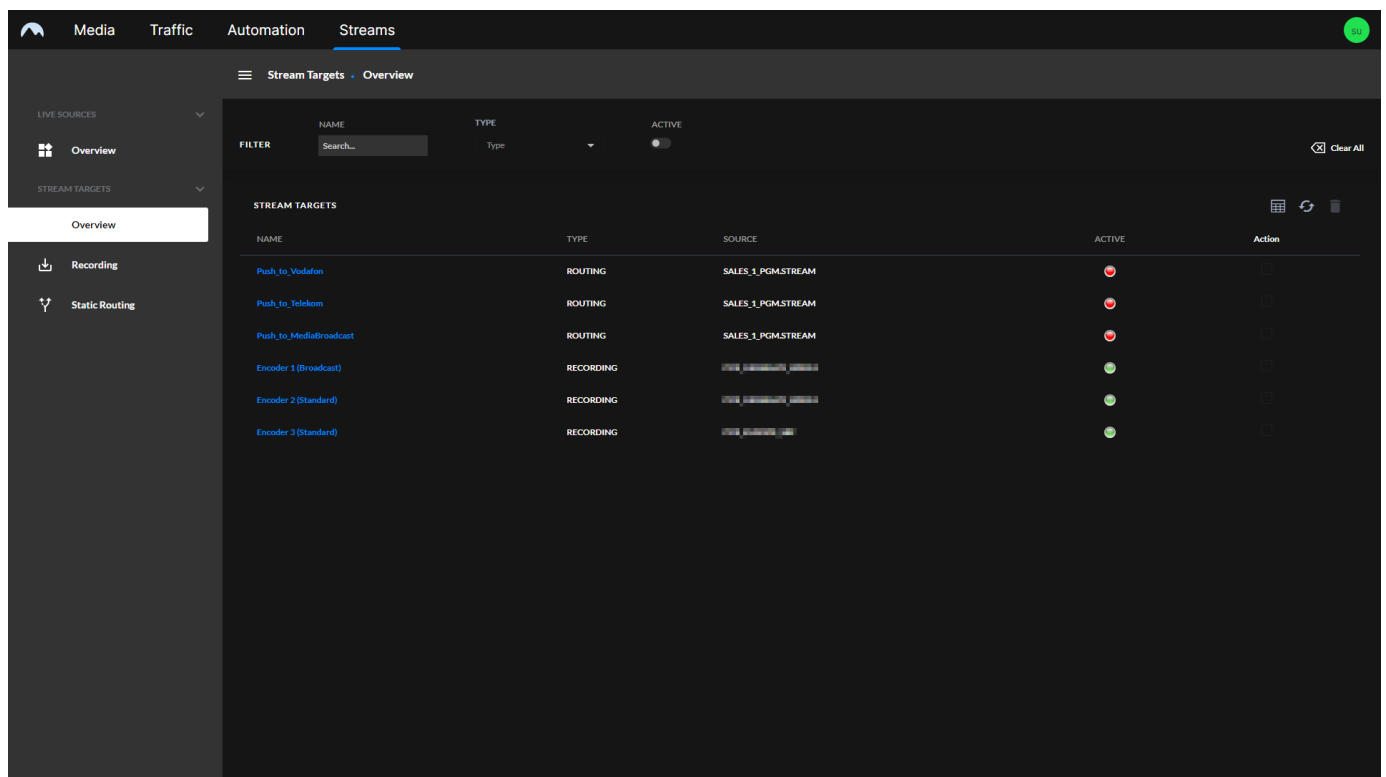
The live source is deleted and removed from the live source list.

## 2.5.3 Manage stream targets

### Using the stream targets overview

To access the stream target overview, in the navigation sidebar on the left select **Stream Targets > Overview**.

The stream target overview is displayed.



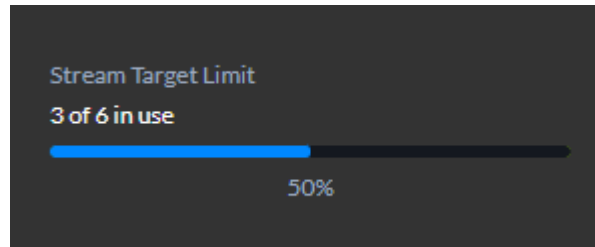
Stream Control - Stream target overview

In the **Stream Targets** area, all currently available stream targets and jobs are listed with basic information (for example, name, type, source, and status). You can customize the columns to be displayed and manually trigger a list update, by using the corresponding buttons above the list.

To display only specific stream targets, use the **Filter** area above the list. There you can, for example, search stream targets by name, by type (YouTube, Generic, etc.), or by active status.

You can display and edit the details of each stream target, by clicking the corresponding stream target name.

The number of available stream targets is limited. Depending on the infrastructure and the Makalu subscription, this number may vary. The total number of stream targets available and current utilization is displayed under **Stream Targets > Static Routing** at the bottom left under **Stream Target Limit**:



*Stream Control - Stream target limit*

### Creating a static routing stream target

A static routing stream target enables you to permanently stream any live source to any valid target, without having to schedule it in a rundown.

To create a static routing stream target, proceed as follows:

1. In the navigation sidebar on the left select **Stream Targets > Static Routing**.
2. In the upper right, click **Add**.

*The Create A Stream Target dialog is displayed.*

3. Select the protocol to be used.

*Depending on the selected protocol, different configuration properties are displayed.*



### CREATE A STREAM TARGET

**PROTOCOL**

SRT

**NAME**

e.g. myDestination-RTMP-720p

**HOST**

e.g test.example.net

**STREAM ID**

Stream Id

**PORT**

e.g. 4004

**LATENCY**

400

**SEND BUFFER SIZE**

12058624

**SEND BUFFER SIZE UDP**

65536

**MAXIMUM SEGMENT SIZE**

1500

**FLIGHT FLAG SIZE**

25600

**MAXIMUM BANDWIDTH**

0

**INPUT BANDWIDTH**

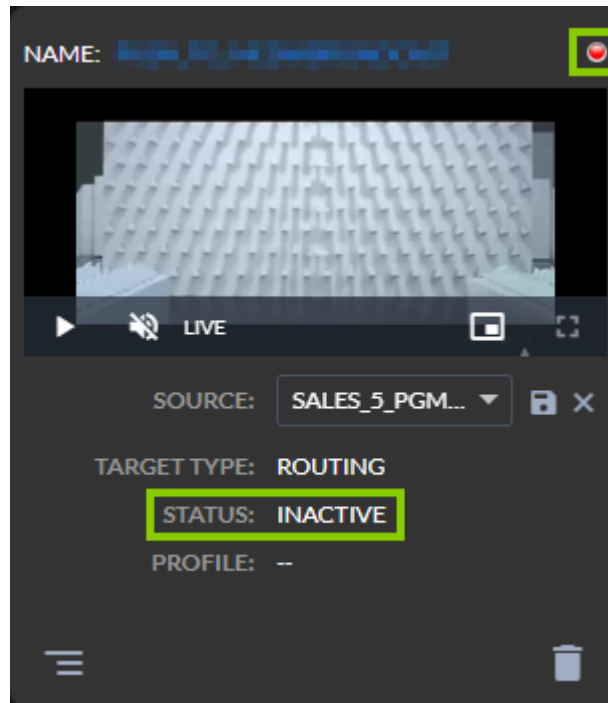
0

Cancel Confirm

*Stream Control - Static routing stream target properties*

4. Set all configuration properties as required.
5. Click **Confirm**.

*The static routing stream target is created and added to the stream targets list with the status inactive (red).*



Stream Control - Static routing stream target created

6. Select the live source to be used via the **Source** dropdown menu.

*If the source stream is valid and running, preview playback starts automatically.*

7. Right next to Source click the **Save source stream** icon.

*The source of the static routing stream target is saved. If the source and target are valid and the stream is running the status changes to active (green).*

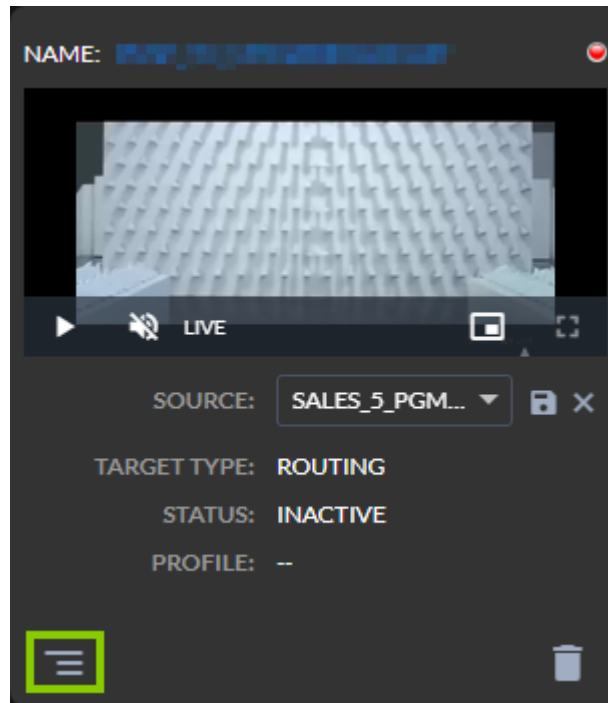
#### **Notice**

To preview the live source, in the preview player click the **Play** icon and use the player controls, for example, to trigger a full-screen preview.

#### **Editing a static routing stream target**

To edit a static routing stream target, proceed as follows:

1. In the navigation sidebar on the left select **Stream Targets > Static Routing**.
2. Look for the target to be edited and in the bottom left of the corresponding tile click the **View and edit configuration data** icon.



*Stream Control - Open static routing stream target settings*

*The target settings are displayed.*

### UPDATE STREAM TARGET


NAME

Static Routing Demo

URL

rtmp://[REDACTED].streamlock.net:1935/live

STREAM KEY


..... 

Protected

USERNAME

[REDACTED]

PASSWORD

.... 

INFO

STREAM NAME	Qair-Demo
APPLICATION	Live
PROFILE	Rtmp

*Stream Control - Static routing stream target settings*

3. Change the settings as required.
4. Confirm your changes, by clicking **Update**.

*The changed static routing stream target settings are saved.*

### Deleting a stream target

To delete a stream target, proceed as follows:

1. In the navigation sidebar on the left select **Stream Targets > Overview**.
2. In the stream targets list in the Action column activate the **checkbox of the stream target to be deleted**.
3. Click the **Delete selected stream target** icon above the live sources list.
4. Confirm the displayed dialog by clicking **Confirm**.

*The stream target is deleted and removed from the stream targets list.*

### Synchronizing stream targets between Wowza and Makalu

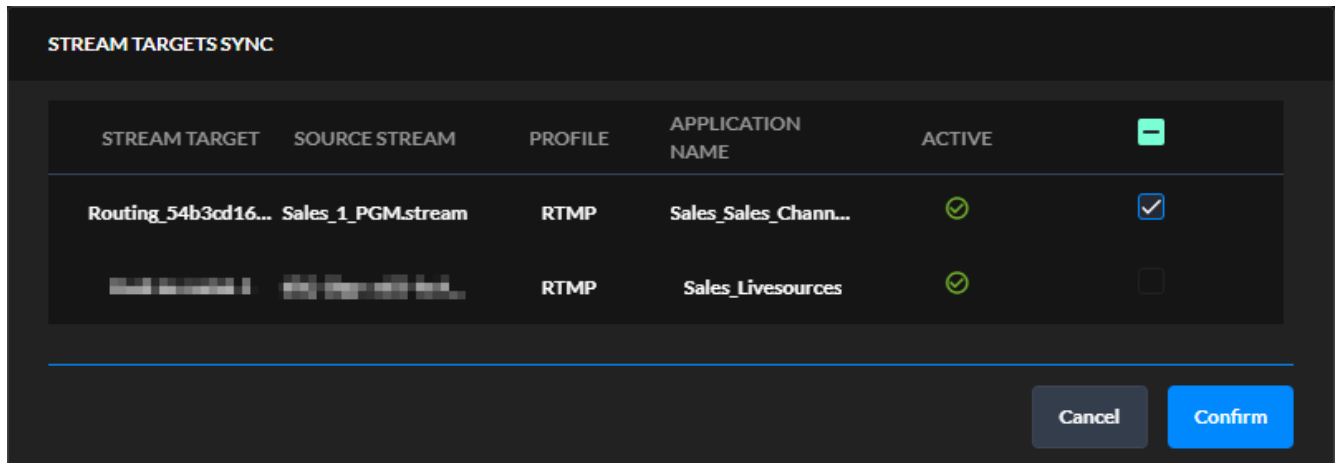
Under certain conditions (for example, because of special customer requirements regarding the stream format or certain stream properties) it may not be possible to create a stream target via the default mechanism provided by Makalu Stream Control. In this case, the corresponding stream target must be created manually via the Wowza Manager UI. Afterward, it can be synchronized with Makalu via Stream Control and can then be used like a "regular" stream target.

To synchronize stream targets, proceed as follows:

1. In the navigation sidebar on the left select **Stream Targets > Static Routing**.
2. In the upper right, click **Sync**.

*All stream targets that were created via the Wowza Manager UI and can be synchronized are listed.*

3. Select one or more stream targets to be synchronized.



*Stream Control - Synchronize stream targets*

4. Click **Confirm**.

*The selected stream targets are synchronized with Makalu and can afterward be used like "regular" stream targets.*

## 2.6 Recording

Recording is an optional Makalu module per playout channel that enables you to record multiple source/input streams at the same time in different formats (profile-based). It can be used for example, for live recordings or compliance recording.

### 2.6.1 Encoder types

The modules that are used for creating recordings are internally referred to as "encoders". Makalu provides the following types of encoders:

Encoder type	Features
Standard	Stream recording (in/out) with MP4 file output
Broadcast	Stream recording (in/out) with broadcast file format output (for example, XDCAM-HD422, AVC-Intra, or XAVC) and growing file support

### 2.6.2 Recording job types

Recordings are internally managed based on recording jobs. For each recording, a corresponding recording job is created. Makalu provides the following types of recording jobs:

Recording job type	Description
Event-based	The recording is attached to and scheduled for a specific event in the rundown, usually a live event (automatic start and stop or automatic start and manual stop). Event-based recording jobs can be created via Makalu Automation and Makalu Traffic.
Crash	The recording is started immediately using Makalu Automation (manual start and stop).
Schedule	The recording is scheduled for a fixed time and period (automatic start and stop or automatic start and manual stop). Scheduled recording jobs can be created via Makalu Automation and Makalu Traffic.

#### Notice

The decision of which app to use for creating a recording job depends on your workflow and how you use Makalu.

Makalu Traffic is designed for creating reusable templates for shows and playlists. It enables you to automatically create recording jobs whenever a specific show template or playlist is used in the rundown.

Makalu Automation is designed for editing the rundown at short notice. It enables you to manually create recording jobs immediately and independent of the used playlists and shows.

## 2.6.3 Creating a recording job via Makalu Traffic

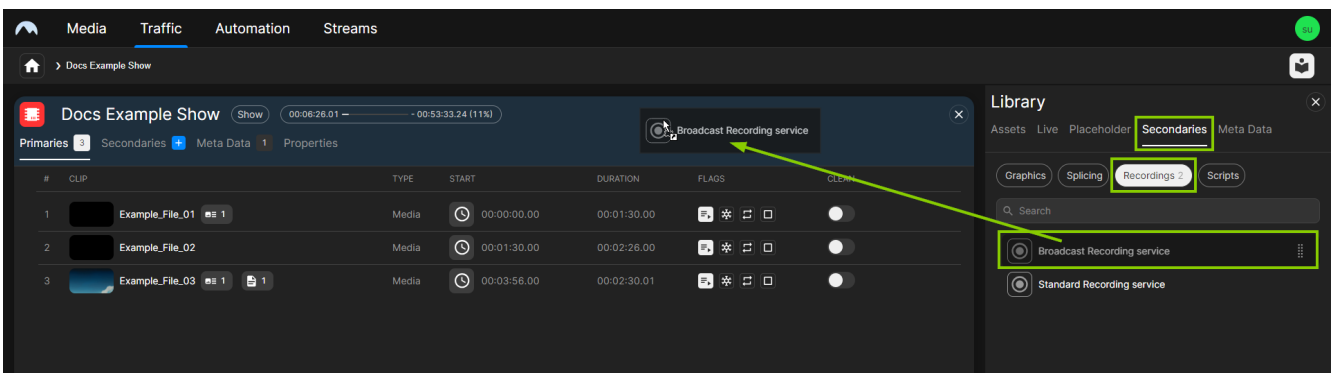
### Notice

In the following, it is assumed that you already have created a show and want to add a recording job to this existing show. For information about how to create a new show, see section [Schedule \(Creating a show\)](#).

You can also add recording jobs to playlists or clips in a similar way. For more information about how to edit a playlist, see section [Schedule \(Editing a playlist\)](#). For more information about how to edit a clip, see section [Schedule \(Editing a clip\)](#).

To add a recording job to a show, proceed as follows:

1. [Open Makalu Traffic](#).
2. In the sidebar on the left, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
3. Select the show to be edited and click **Open** on the right side of the corresponding row.  
*The show details are displayed.*
4. On the right side in the **Library** select the **Secondaries** tab and below the type **Recordings**.  
*All available recording secondary events are displayed below.*
5. Depending on the encoder type to be used, add the corresponding recording secondary event to the show, by dragging it from the library on the show information area.



*Traffic - Add a recording secondary event to a show*

*The recording secondary event is added to the show.*

6. Edit the properties of the added recording secondary event as follows:
  - a. Select the **Secondaries** tab in the show information area.  
*All added secondary events are listed below.*
  - b. Hover your mouse over the recording secondary event to be edited and click **Open** on the right side of the corresponding row.  
*The properties of the selected recording secondary event are displayed on the right side.*
  - c. Edit the properties of the added recording secondary event as required.
  - d. To confirm your changes click **Save**.

*The properties of the recording secondary event are saved.*

The show is saved. Whenever you add the show to the rundown, a recording job is automatically created with the properties you selected. You can control it via Makalu Automation in the [Recordings](#) area.

## 2.6.4 Creating a recording job via Makalu Automation

### Notice

The areas of the Makalu Automation user interface relevant for recording are the **Recordings** tab and the corresponding secondary event type listed under **Media > Secondary Events > Recordings**. Both are only available if the optional Makalu Recording module is enabled for the currently selected playout channel.

### Creating an event-based recording job

### Notice

Event-based recording jobs are typically used to record live events. In this case, only the clean feed of the selected live source (as fed to Makalu Automation) is recorded without any added graphics or other overlays.

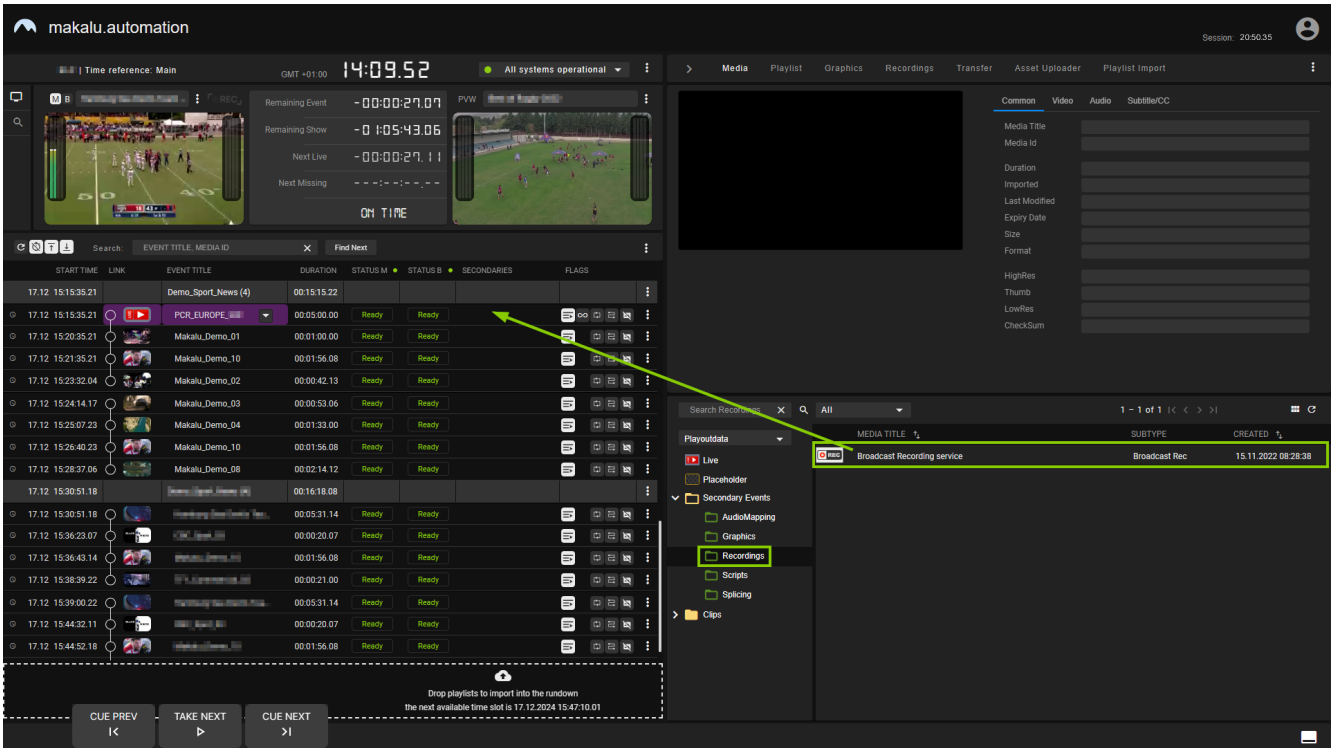
To create an event-based recording job, proceed as follows:

1. [Open Makalu Automation](#).
2. On the right side, select the **Media** tab.  
*All available media items are listed in the media list in the lower area of the **Media** tab.*
3. In the media list select **Secondary Events > Recordings**.  
*All available recording secondary events are listed to the right.*
4. Select a recording secondary event and drag it on the clip in the rundown to be recorded (a primary event, usually of type "live").

### Notice

By default, recording secondary events can only be added to live events in the rundown.





Automation - Add a recording secondary event to the rundown

The recording secondary event is added to the clip in the rundown. It is recognizable by the **Recording secondary event icon** in the **Secondaries** column. A corresponding recording job is created and added to the job list in the **Recordings** tab.

The screenshot displays the Makalu Automation interface for creating a recording job. The 'Recordings' tab is active and highlighted. The interface is split into three main sections:

- Encoder 1 (Broadcast) (Preview):** Shows a video preview window and a timeline with 'Current' and 'Total' time indicators.
- Channel:** A dropdown menu showing 'Encoder 1 (Broadcast)' selected.
- Encoder 1 (Broadcast) (Preferences):** A configuration panel with the following settings:
  - Title: Title
  - Filename: Filename
  - Folder: Clips
  - Source: PCR\_EUROPE\_ (with a 'Save As Default' button)
  - Profile: MXF XDCAMHD... (with a 'Type: Single Shot' dropdown)
  - Split: off (with an 'Automatic Split: off' dropdown)
  - Schedule: A section with 'Start' (14:48:19, 17.12.2024) and 'End' (15:48:19, 17.12.2024) fields, and an 'Add' button.

At the bottom, a table lists recording jobs. The first row is highlighted in green:

TITLE	CHANNEL	TYPE	STATUS	STARTTIME	DURATION	ACTION
Rundown	Encoder 1 (Broad...	Event	Waiting	17.12 15:40:42.09	00:05:00	[Icons]

Automation - Recording job created

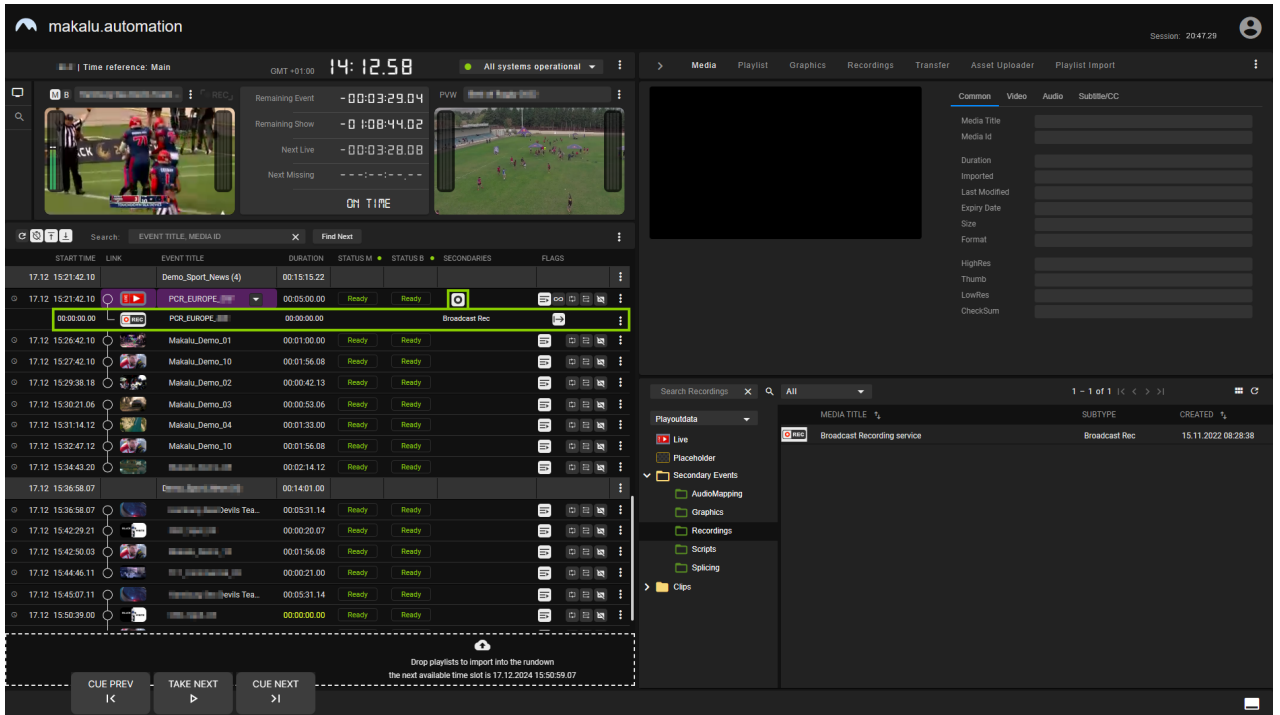
#### Tip

To display detailed information about a recording job, click the **Options** icon on the right side of the corresponding row in the job list and select **Job info**.


5. (Optional) Edit the properties of the added recording secondary event as follows:

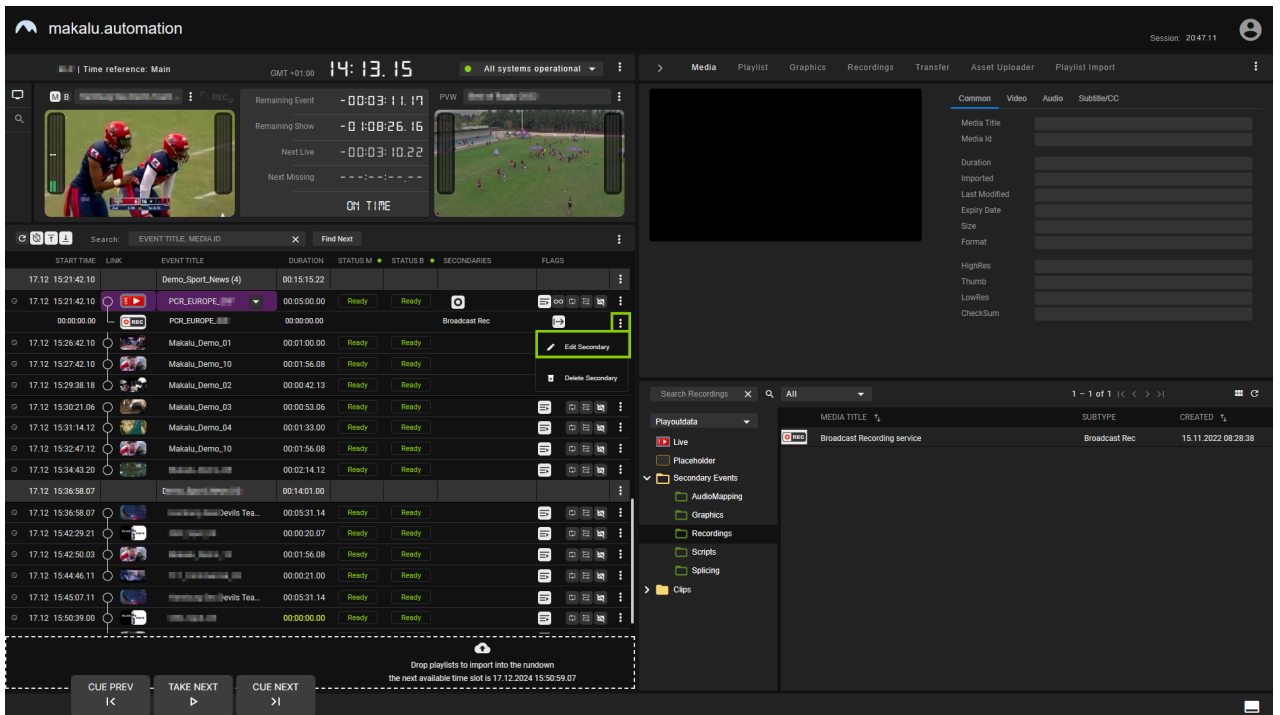
- In the rundown click the **Recording secondary event** icon in the **Secondaries** column of the corresponding rundown item.

*Details about the secondary event expand below.*



Automation - Secondary event details

- b. Click the **Options** icon  on the right side of the secondary event row and select **Edit Secondary**.



Automation - Open secondary event properties

- c. In the **Edit secondary event** menu edit the properties as required.

**Notice**

For detailed information about available recording secondary event properties, see section [Recording properties](#).

- d. Confirm your changes, by clicking **Apply**.

The properties of the recording secondary event are saved. By default (if the properties **Start Offset** and **End Offset** are set to 0), the recording job starts automatically when the corresponding clip actually starts and stops automatically when the clip ends. If a live event is stopped manually by an operator, the corresponding recording job stops at the same time.

### Creating a crash recording job

To create a crash recording job, proceed as follows:

1. [Open Makalu Automation](#).
2. On the right side select the **Recordings** tab.

The recording controls are displayed.

#### Automation - Recordings

3. In the encoder list select the encoder to be used for the recording.
4. In the **Preferences** area edit the [recording settings](#).

**Notice**

To create a recording job you must enter at least the title.

5. Select the **Folder** where to save the recording.
6. Select the **Source** to be recorded.

**Tip**

To watch a preview of the selected source, click the **Play** icon in the **Preview** area of the selected encoder.

7. (Optional) If you want to reuse the recording job and create multiple recordings, select **Type Multi Shot**. To create only a single recording, leave the default **Type Single Shot**.
8. (Optional) If you want to split the recording automatically, enable **Split** and select an **Automatic Split** interval. To split a recording manually, select **Automatic Split off**.
9. (Optional) If you want to delete the recording automatically after a predefined time, enable **Loop** and select a **Retention Period**.
10. Click **Apply**.

The screenshot displays the Makalu Automation interface for configuring a recording job. The top navigation bar includes options like Media, Playlist, Graphics, Recordings, Transfer, Asset Uploader, and Playlist Import. The main area is divided into three sections:

- Encoder 1 (Broadcast) (Preview):** Shows a video preview of Peppa Pig. Below the preview are playback controls and a status table:
 

Current	Total
00:00:00.00	00:00:00.00
00:00:00.00	00:00:00.00

 A metadata box below the table shows: Source: Sales\_1\_PGM.stream, Input: H.264, Profile: MXF XDCAMHD422, Status: Offline, Name: Example Recording.
- Encoder 1 (Broadcast) (Preferences):** Contains configuration options:
  - Common:** Title: Example Recording; Filename: Filename; Folder: Clips/Documentation; Source: Sales\_1\_PGM.stream; Profile: MXF XDCAMHD...; Type: Single Shot; Split: off; Automatic Split: off.
  - Schedule:** Start: 14:12:57, 09.04.2024; End: 15:12:57, 09.04.2024; open end checkbox; Add button.
- Recordings:** A table with columns: Channel, Source, Type, Status, Profile, Action. The table is currently empty.

Automation - Create crash recording job

The crash job is created, added to the Recordings list, and prepared. There you can control it manually. For more information, see section [Controlling a recording job](#).

The screenshot displays the Makalu Automation interface for configuring a recording job. The top navigation bar includes options like Media, Playlist, Graphics, Recordings, Transfer, Asset Uploader, and Playlist Import. The main content area is split into three panels:

- Encoder 1 (Broadcast) (Preview):** Shows a live preview of a cartoon scene with a man and a woman. Below the preview are controls for play, stop, and refresh, along with timecode displays for Current, Total, and Next.
- Encoder 1 (Broadcast) (Preferences):** Contains configuration options for the selected encoder. The 'Common' section includes fields for Title (Example Recording), Filename, Folder (Clips/Documentation), Source (Sales\_1\_PGM.stream), Profile (MXF XDCAMHD...), and Type (Single Shot). There is also a 'Schedule' section with Start and End times and dates, and an 'open end' toggle.
- Recordings List:** A table at the bottom shows the recording job details. The first row is highlighted with a red box:

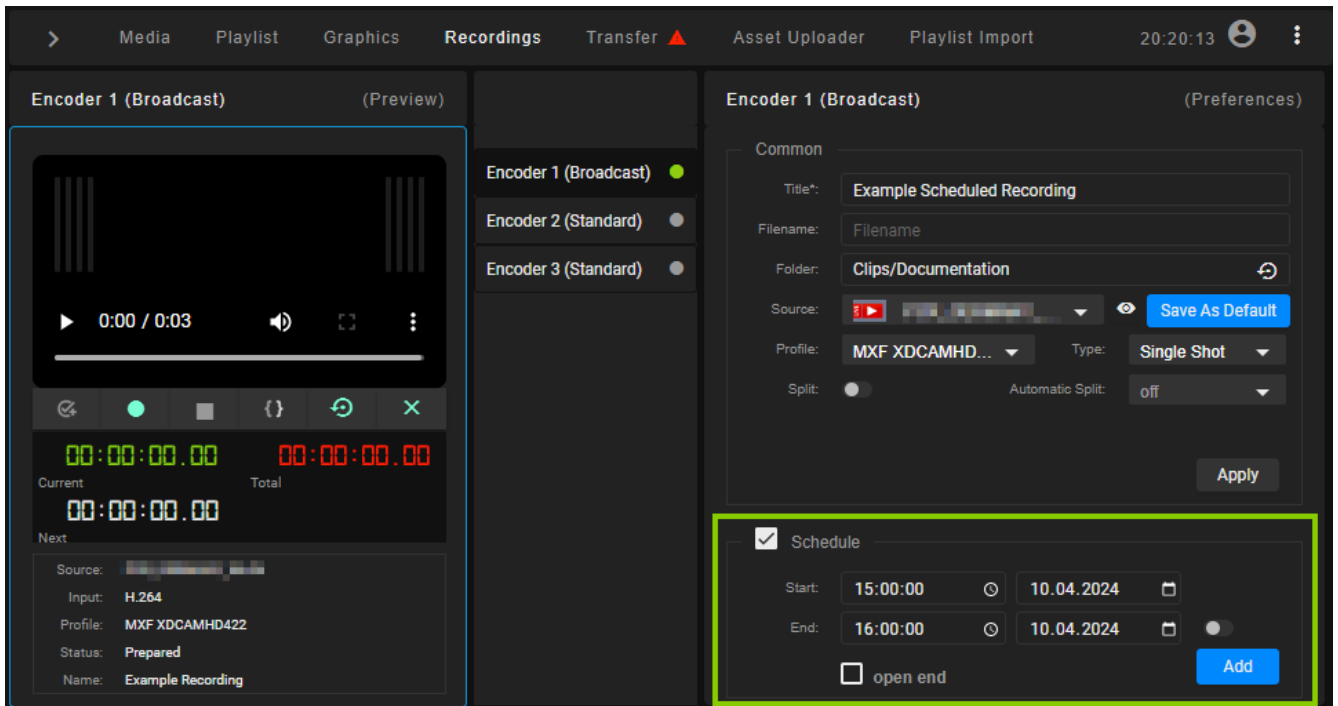
Channel	Source	Type	Status	Profile	Action
Encoder 1 (Broadc...	Sales_1_PG...	Crash	Prepared	MXF XDC...	[Icons for edit, play, stop, refresh, delete]

Automation - Crash recording job created

### Creating a scheduled recording job

To create a scheduled recording job, proceed as follows:

1. Repeat steps one to nine as described in section [Creating a crash recording job](#).
2. Enable **Schedule**.
3. Enter a **Start** time and date.
4. Enter an **End** time and date or, if you want to enter a duration, enable the toggle switch to the right of the end date. Alternatively, you can create a scheduled recording job without specifying an end time, by selecting **Open end**.



Automation - Create scheduled job

5. Click **Add**.

The scheduled job is created and added to the recording list.

The screenshot displays the Makalu Automation interface for creating a recording job. The top navigation bar includes Media, Playlist, Graphics, Recordings (active), Transfer, Asset Uploader, and Playlist Import. The main area is divided into three panels:

- Encoder 1 (Broadcast) (Preview):** Shows a video player with a play button, a progress bar at 0:00 / 0:03, and a volume icon. Below the player are controls for mute, stop, and refresh. A digital display shows 'Current' time as 24:26:00.21 and 'Total' time as 00:00:00.00. Below this, it shows 'Next' source information: Source, Input: H.264, Profile: MXF XDCAMHD422, Status: Prepared, Name: Example Recording.
- Encoder 1 (Broadcast) (Preferences):** Shows settings for a scheduled recording job:
  - Title: Example Scheduled Recording
  - Filename: Filename
  - Folder: Clips/Documentation
  - Source: Sales\_1\_PG... (with a 'Save As Default' button)
  - Profile: MXF XDCAMHD... (with a dropdown arrow)
  - Type: Single Shot (with a dropdown arrow)
  - Split: off (with a dropdown arrow)
  - Automatic Split: off (with a dropdown arrow)
  - Schedule:  Schedule
    - Start: 15:00:00 (with a clock icon) on 10.04.2024 (with a calendar icon)
    - End: 16:00:00 (with a clock icon) on 10.04.2024 (with a calendar icon)
    - open end:  open end
    - Add:
- Recordings:** A table showing a list of recordings with columns for Channel, Source, Type, Status, Profile, and Action. The first row is highlighted in green and shows a scheduled recording job.

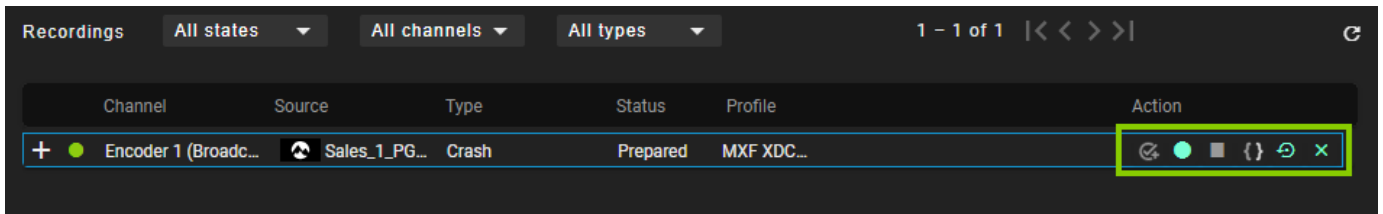
Channel	Source	Type	Status	Profile	Action
+ ● Encoder 1 (Broadc...	Sales_1_PG...	Schedule	Waiting	MXF XDC...	10.04.2024 15:00:00.00 01:00:00
+ ● Encoder 1 (Broadc...	Sales_1_PG...	Crash	Prepared	MXF XDC...	

*Automation - Scheduled recording job created*

### Controlling a recording job

In the **Recordings** area, the list of available recording jobs is displayed. You can control a recording job via the icons in the **Action** column.





### Automation - Controlling recordings

- To prepare a recording job, click the **Prepare** icon

#### Notice

Crash recording jobs are prepared automatically.

- To start a recording job, click the **Start record** icon .
- To stop a recording job, click the **Stop record** icon .
- To split a recording job, click the **Split record** icon .
- To cancel a recording job, click the **Cancel record** icon .
- To delete a recording job, click the **Delete record** icon .

### Deleting a recording job

You can delete a recording job either via the **Recordings** tab or, in case of of an event-based job, via the rundown.

To delete a recording job via the **Recordings** tab, proceed as follows:

- In the **Recordings** section, select the recording job to be deleted.
- Click the **Options** icon on the right side of the corresponding row and select **Delete job..**
- Confirm the displayed dialog by clicking **Yes**.

*The recording job is deleted.*

To remove a recording secondary event from a clip and delete the corresponding recording job, proceed as follows:

- In the rundown click the **Recording secondary event** icon in the **Secondaries** column of the clip from which you want to remove a recording secondary event.

*Details about the secondary event expand below.*

- Click the **Options** icon on the right side of the expanded row and select **Delete secondary**.
- In the confirmation dialog click **Yes**.

*The recording secondary event is removed from the clip and the corresponding recording job is deleted.*

### Previewing a recorded file

To preview a recorded file, search and select the file in the **Media** tab and proceed as described in section [Previewing media assets](#).

## 2.7 Ad triggering

### **Notice**

Dynamic ad triggering requires the optional Makalu SCTE 35 add-on.

The Dynamic ad triggering feature enables you to signal ad insertion opportunities that can be used by downstream systems to automatically replace these parts of your content.

The underlying workflow is based on the SCTE 35 and SCTE 104 standards and enables you to schedule splicing event trigger points as secondary events in your program that are afterward included in the playout output signal/data stream. These splicing trigger points can be evaluated by downstream systems to perform server-side or player-side ad insertion. In addition to ad insertion, splicing events can be used for various other purposes, for example, for regional content variations (opt-out), for blanking content on the web or to trigger recording servers.

Shortly before a splicing event is sent by the playout, the event itself is announced. For this purpose, additional information is included in the playout output signal/data stream. The time interval for announcing the upcoming splicing event is configurable and usually set between 1 and 4 seconds before the start of the actual event.

Depending on its [properties](#) a splicing event can be stopped either automatically or manually. For an automatic splicing event the end event trigger is automatically sent when the playback of the corresponding clip or show is finished. A manual splicing event must be stopped manually by an operator.

You can add splicing events to clips (primary events) in the following ways:

- use Makalu Traffic to add splicing events manually during program planning
- use Makalu Automation to add splicing events manually at short notice
- use Makalu Playlist Importer to add splicing events automatically, based on the data provided by an external traffic system (for more information, see section [Playlist Import](#))

### 2.7.1 Splicing event types

Makalu provides the following splicing event types:

Makalu splicing event type	Matching splice command according to SCTE 35/104 specification
Avail (generic)	Corresponds to the legacy splice command <code>splice_insert()</code>
Timed (generic)	Corresponds to the more recent splice command <code>time_signal()</code> with segmentation descriptor
Platform-specific (named after the corresponding target platform)	Corresponds to either <code>splice_insert()</code> or <code>time_signal()</code> with segmentation descriptor with a target platform-specific configuration

Which splicing event type you need to use for your application depends on the configuration of your downstream systems and what data your target platforms expect.

### **Notice**

Makalu also supports adding multiple splicing secondary events to the same clip. This is useful if your playout output signal/data stream is delivered to multiple target platforms. Usually, in this case, a corresponding splicing secondary event is configured in Makalu per target platform. This enables you to add multiple of these secondary events to the same clip to provide each target platform with the specific splicing data they expect.

For more information about the technical details of the corresponding standards, refer to the official specifications on the SCTE website:

- [SCTE 35](#)
- [SCTE 104](#)

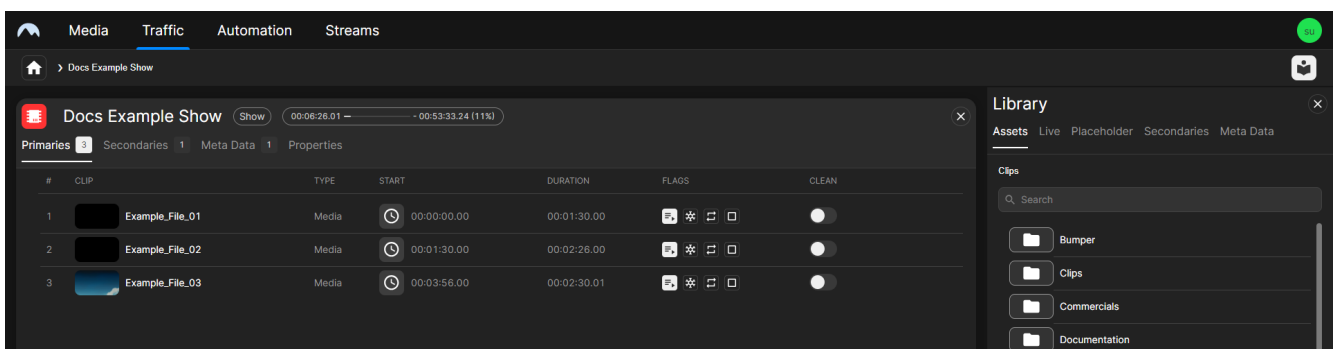
## 2.7.2 Adding a splicing event via Makalu Traffic

### **Notice**

In the following, it is assumed that you already have created a show and want to add a splicing event to a clip within the show. For information about how to create a new show, see section [Creating a show](#).

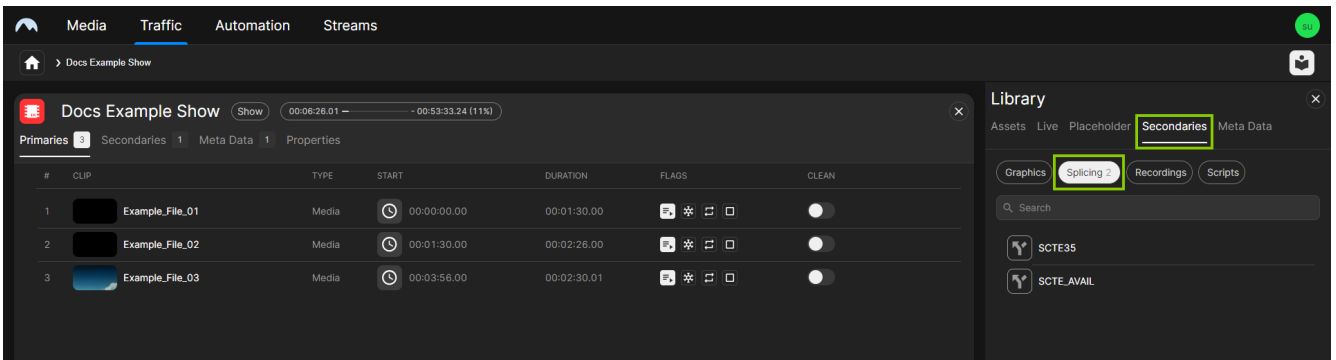
To add a splicing event to a clip, proceed as follows:

1. In the sidebar on the left, select **Shows**.  
*All available shows of the currently selected channel are listed in the middle.*
2. Select the show to be edited and click **Open** at the right end of the corresponding row.  
*The show details are displayed.*



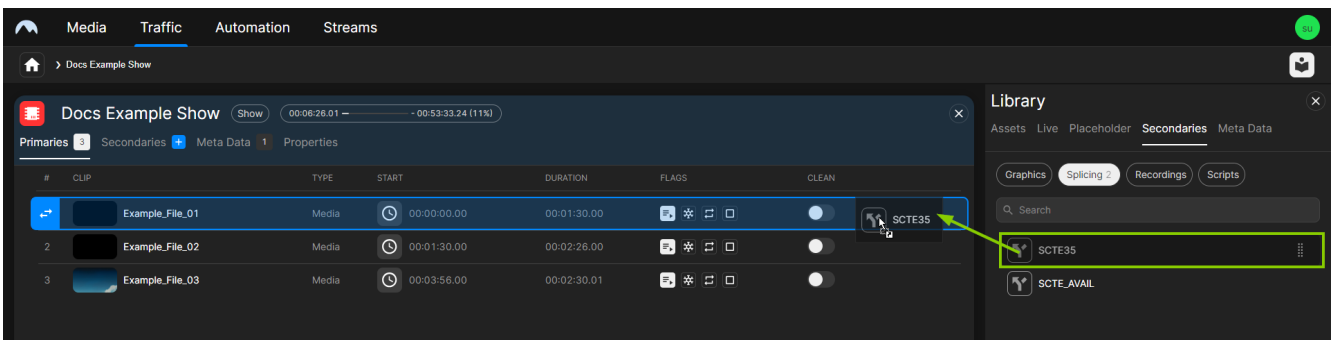
*Traffic - Show details*

3. In the **Library** on the right side, select **Secondaries > Splicing**.  
*All available splicing secondary events are listed below.*



*Traffic - Available splicing secondary events*

4. Drag the splicing secondary event to be added on the corresponding clip.



*Traffic - Splicing secondary event added to a clip*

*The splicing secondary event is added to the clip and the secondary event icon is displayed to the right of the clip name.*

5. If necessary, edit the secondary event properties as follows:
  - a. Select the clip.  
*The clip details are displayed on the right side.*
  - b. In the clip details select the **Secondaries** tab.  
*All secondary events added to the clip are listed.*
  - c. Hover your mouse over the secondary event to be edited and click **Open** at the right end of the corresponding row.  
*The secondary event properties are displayed.*
  - d. Edit the available properties as required.

#### **Notice**


For detailed information about available splicing secondary event properties, see section [Splicing properties](#).

- e. To confirm your changes, click **Save**.

*The changes are saved.*

## Tip

To delete a splicing secondary event from a single clip, proceed as follows:

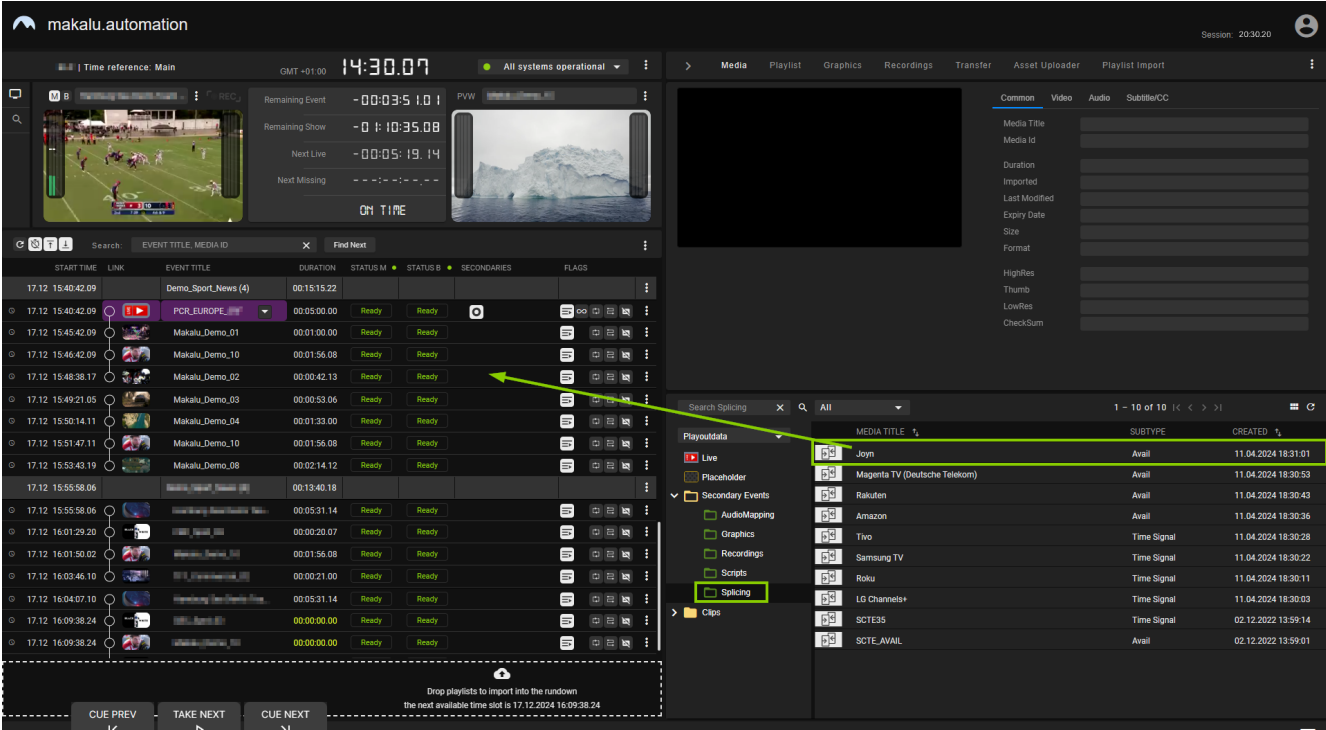
1. In the clip list of the show, select the corresponding clip.
2. In the clip details area on the right side, select the **Secondaries** tab.
3. Hover your mouse over the splicing event to delete and click the **Delete** icon  on the right side of the corresponding row.
4. In the confirmation dialog click **Remove**.

*The splicing secondary event is removed from the clip.*

## 2.7.3 Adding a splicing event via Makalu Automation

To add a splicing secondary event to a clip, proceed as follows:


1. [Open Makalu Automation](#).
2. On the right side, select the **Media** tab.  
*All available media items are listed in the media list in the lower area of the **Media** tab.*
3. In the media list select **Secondary Events > Splicing**.  
*All available splicing secondary events are listed to the right.*
4. Select a splicing secondary event (usually a platform-specific event, named after the corresponding target platform) and drag it on a clip in the rundown.




The screenshot displays the Makalu Automation interface. At the top, there's a session overview with 'Time reference: Main', 'GMT +01:00', and '14:30:07'. Below this is a 'Remaining Event' and 'Remaining Show' section. The main area is a rundown table with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. A green arrow points from a 'Splicing' event in the 'Secondary Events' section of the media list to a clip in the rundown. The media list on the right shows a search for 'Splicing' and a list of events including 'Joyn', 'Magenta TV (Deutsche Telekom)', 'Rakuten', 'Amazon', 'Tivo', 'Samsung TV', 'Roku', 'LG Channels+', 'SCTE35', and 'SCTE\_AVAL'.

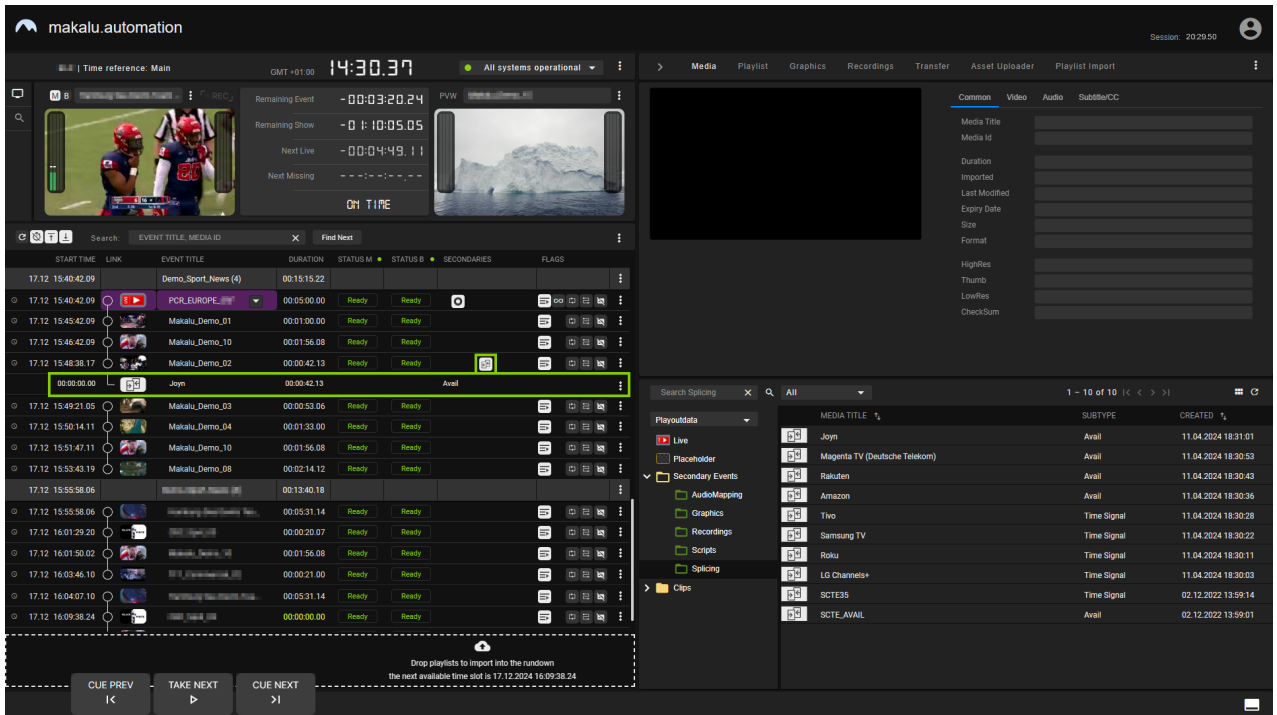
START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
17.12 15:40:42.09		Demo_Sport_News (4)	00:15:15.22				
17.12 15:40:42.09		PCR_EUROPE	00:05:00.00	Ready	Ready		
17.12 15:45:42.09		Makalu_Demo_01	00:01:00.00	Ready	Ready		
17.12 15:46:42.09		Makalu_Demo_10	00:01:56.08	Ready	Ready		
17.12 15:48:38.17		Makalu_Demo_02	00:00:42.13	Ready	Ready		
17.12 15:49:21.05		Makalu_Demo_03	00:00:53.06	Ready	Ready		
17.12 15:50:14.11		Makalu_Demo_04	00:01:33.00	Ready	Ready		
17.12 15:51:47.11		Makalu_Demo_10	00:01:56.08	Ready	Ready		
17.12 15:53:43.19		Makalu_Demo_08	00:02:14.12	Ready	Ready		
17.12 15:55:58.06		Makalu_Demo_05	00:01:34.00	Ready	Ready		
17.12 15:55:58.06		Recording_Best_of_The_Year	00:05:31.14	Ready	Ready		
17.12 16:01:29.20		Makalu_Demo_06	00:00:20.07	Ready	Ready		
17.12 16:01:50.02		Makalu_Demo_07	00:01:56.08	Ready	Ready		
17.12 16:03:46.10		Makalu_Demo_09	00:00:21.00	Ready	Ready		
17.12 16:04:07.10		Recording_Best_of_The_Year	00:05:31.14	Ready	Ready		
17.12 16:09:38.24		Makalu_Demo_08	00:00:00.00	Ready	Ready		
17.12 16:09:38.24		Makalu_Demo_09	00:00:00.00	Ready	Ready		

Automation - Add a splicing secondary event to the rundown


The splicing secondary event is added to the clip in the rundown. It is recognizable by the **Splicing secondary event icon**  in the **Secondaries** column.

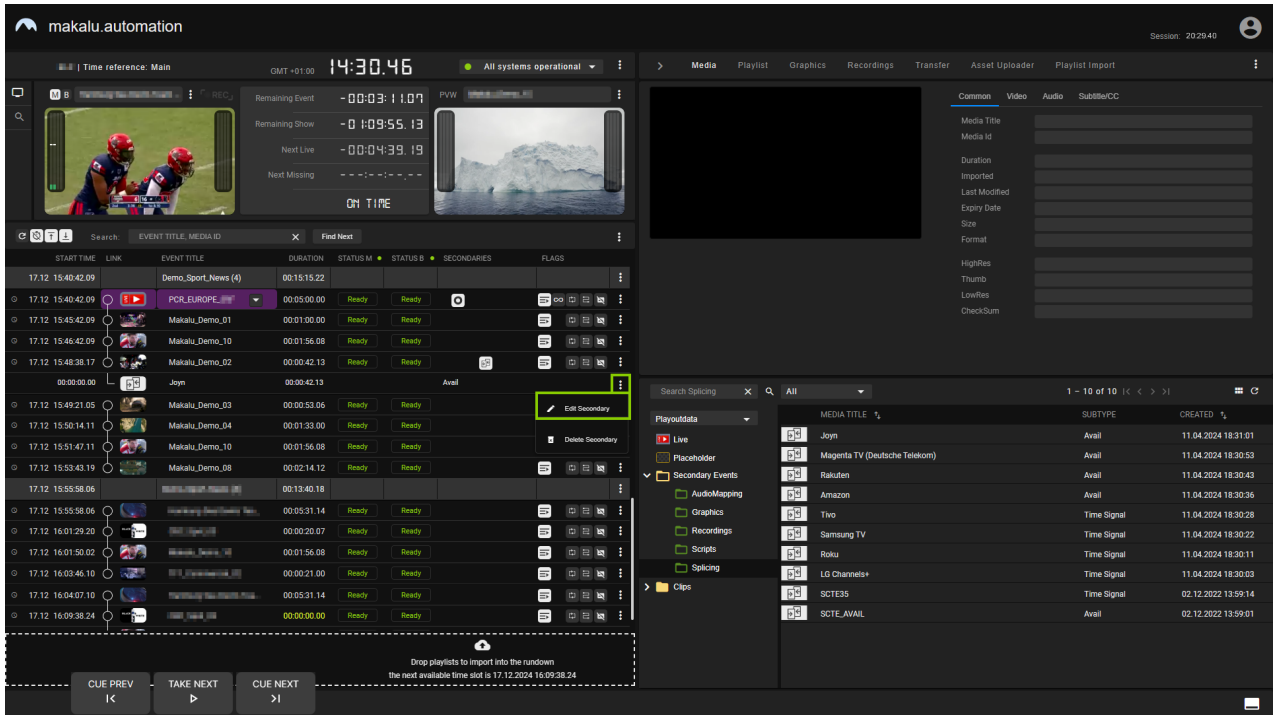
5. (Optional) Edit the properties of the added splicing secondary event as follows:

- a. In the rundown click the **Splicing secondary event icon**  in the **Secondaries** column of the corresponding clip. *Details about the secondary event expand below.*



Automation - Secondary event details

- b. Click the **Options icon**  on the right side of the expanded row and select **Edit Secondary**.



Automation - Open secondary event properties

- c. In the **Edit secondary event** menu edit the properties as required.

**Notice**



For detailed information about available splicing secondary event properties, see section [Splicing properties](#).

- d. Confirm your changes, by clicking **Apply**.  
*The properties of the splicing secondary event are saved.*

- 6. (Optional) To add more splicing secondary events to the corresponding clip, repeat steps four and five.

**Tip**

To remove a splicing secondary event from a clip, proceed as follows:

1. In the rundown click the **Splicing secondary event** icon  in the **Secondaries** column of the clip from which you want to remove a splicing event.  
*Details about the secondary event expand below.*
2. Click the **Options** icon  on the right side of the expanded row and select **Delete secondary**.
3. In the confirmation dialog click **Yes**.

*The splicing secondary event is removed from the clip.*

## 2.8 Audio mapping

### 2.8.1 Basic information

Makalu includes a feature for audio mapping (also referred to as "audio routing" or "audio shuffling"), that provides versatility when working with varying audio configurations, as it allows you to map audio inputs to audio outputs as required. It enables error-free audio playback, by ensuring that the audio included in the files and live sources used on the input side, matches the configured audio scheme of the channel on the output side. The mapping between audio input and output is controlled via audio schemes, which are part of the configuration of each Makalu playout channel.

An audio scheme could, for example, include the following default mapping for input files/live sources with eight audio channels mapped to eight output channels:

Audio input	Mapped to audio output
Input 1	Output 1 (Full Mix L)
Input 2	Output 2 (Full Mix R)
Input 3	Output 3 (Original Language L)
Input 4	Output 4 (Original Language R)
Input 5	Output 5 (Audio Description L)
Input 6	Output 6 (Audio Description R)
Input 7	Output 7 (Silence L)
Input 8	Output 8 (Silence R)

Both file-based and live sources can include multiple audio tracks, which in turn can contain multiple audio channels. To be played correctly, each source has to be checked and configured accordingly. For uploaded files, this is done automatically as part of the determination of the technical metadata during [file processing](#).

The input and output audio channels are mapped either by automatically applying a standard audio scheme with a default configuration or by manually defining an individual audio mapping for each clip. This enables you to define how to deal with file-based content or live input that deviates from the configured channel audio output.

For this purpose, Makalu provides secondary events of the type **Audio mapping** that can be used in the following ways:

- they can be added to clips in the rundown at short notice via Makalu Automation
- they can be added on the fly to the clip currently on-air via Makalu Automation

### 2.8.2 Common use cases

A common use case for this feature is to plan the mapping/routing of audio channels in advance, for example, to adapt the audio playback of purchased content (which uses a deviating audio channel configuration, for example, a different number of audio channels) to the configured channel audio output. This eliminates the need for the time-consuming and expensive process of producing the corresponding content again with an adapted audio configuration.



An example audio scheme for input files with two audio channels mapped to eight output channels could include the following mapping:

Audio input	Mapped to audio output
Input 1	Output 1
Input 2	Output 2
Input 1	Output 3
Input 2	Output 4
Input 1	Output 5
Input 2	Output 6
Input 1	Output 7
Input 2	Output 8

Another use case could be a live source with faulty audio. For example, a live source should be played and the TX operator checks it via the preview of the Automation UI. It turns out that only the left channel of an expected stereo signal of the live source is working. The source may have an error, but stereo output should still be made possible. By using the audio mapping feature, the TX operator can map the left input channel to all output channels as a workaround, so that at least all output channels play audio.

An example audio scheme for input sources with one audio channel mapped to eight output channels could include the following mapping:

Audio input	Mapped to audio output
Input 1	Output 1
Input 1	Output 2
Input 1	Output 3
Input 1	Output 4
Input 1	Output 5
Input 1	Output 6
Input 1	Output 7
Input 1	Output 8

### 2.8.3 Using audio mapping for short-term planning (via Makalu Automation)

To change the audio mapping settings of any clip in the rundown, add an audio mapping secondary event as follows:

1. Open the Makalu Automation detailed channel view as described in section [Accessing the detailed channel view](#).
2. On the right side, select the **Media** tab.

All available media items are listed in the media list.

The screenshot shows the Makalu Automation interface. The top navigation bar includes 'Media', 'Traffic', 'Automation', and 'Streams'. The 'Automation' tab is active, and the 'Media' sub-tab is selected. The main area displays a rundown of events with columns for 'START TIME', 'LINK', 'EVENT TITLE', 'DURATION', 'STATUS M', 'STATUS B', 'SECONDARIES', and 'FLAGS'. The media list on the right shows a search for 'Secondary Events' and a table of live sources.

START TIME	LINK	EVENT TITLE	DURATION	STATUS M	STATUS B	SECONDARIES	FLAGS
10.04 23:14:57.05		06_SIG_HALF TIME	00:00:12.00	Ready	Ready		
10.04 23:15:09.05		Berlin Thunder Team Ont...	00:06:14.02	Ready	Ready		
10.04 23:21:23.07		07_SIG_END_OF_3RD	00:00:12.00	Ready	Ready		
10.04 23:21:35.07		Berlin Thunder Team Ont...	00:06:14.02	Ready	Ready		
10.04 23:27:49.09		Hamburg Sea Devils Tes...	00:05:31.14	Ready	Ready		
10.04 23:33:20.23		07_SIG_END_OF_3RD1	00:00:12.00	Ready	Ready		
10.04 23:33:32.23		SEH_ELF_TEASER_20_PL...	00:00:20.00	Ready	Ready		
10.04 23:33:52.23		SEH_ELF_TEASER_20_PL...	00:00:20.00	Ready	Ready		
10.04 23:34:12.23		06_SIG_HALF TIME	00:00:12.00	Ready	Ready		
10.04 23:34:24.23		Berlin Thunder Team Ont...	00:06:14.02	Ready	Ready		
10.04 23:40:39.00		Docs Example Playlist (9)	00:42:32.18				
10.04 23:40:39.00		Example_File_01	00:01:30.00	Ready	Ready		
10.04 23:42:09.00		Example_File_02	00:02:26.00	Ready	Ready		
10.04 23:44:35.00		Example_File_03	00:02:30.01	Ready	Ready		
10.04 23:47:05.01		Example_File_04	00:10:34.13	Ready	Ready		
10.04 23:57:39.14		Example_File_05	00:00:10.10	Ready	Ready		
10.04 23:57:49.24		Example_File_04	00:10:34.13	Ready	Ready		
11.04 00:08:24.12		Example_File_09	00:14:47.06	Ready	Ready		

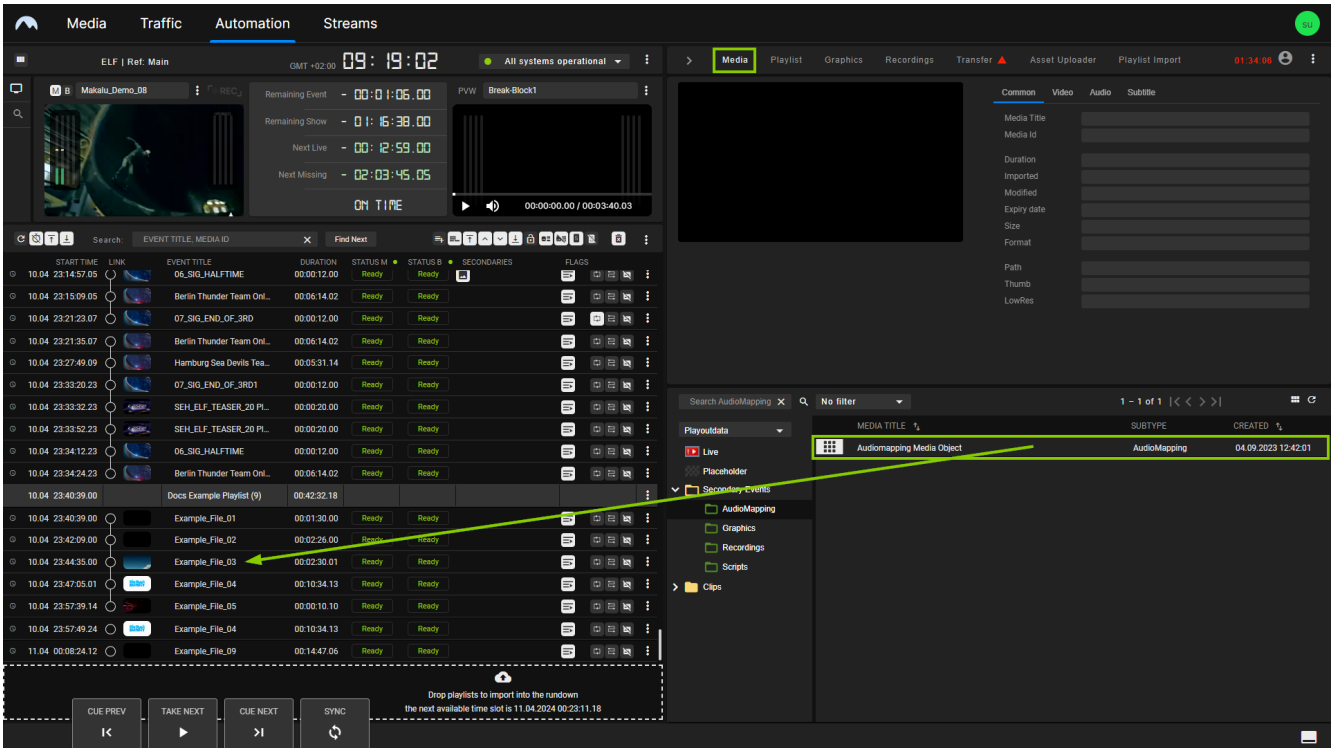
PLAYOUTDATA	MEDIA TITLE	MODIFIED	DURATION	MEDIA ID	STATUS
Live		21.03.2024	101		
Placeholder		01.04.2023	4		
Secondary Events		01.04.2023	7		
Caps					

Automation - Show expanded and media tab opened

- In the media list click **Secondary Events** and select **Audio Mapping**.

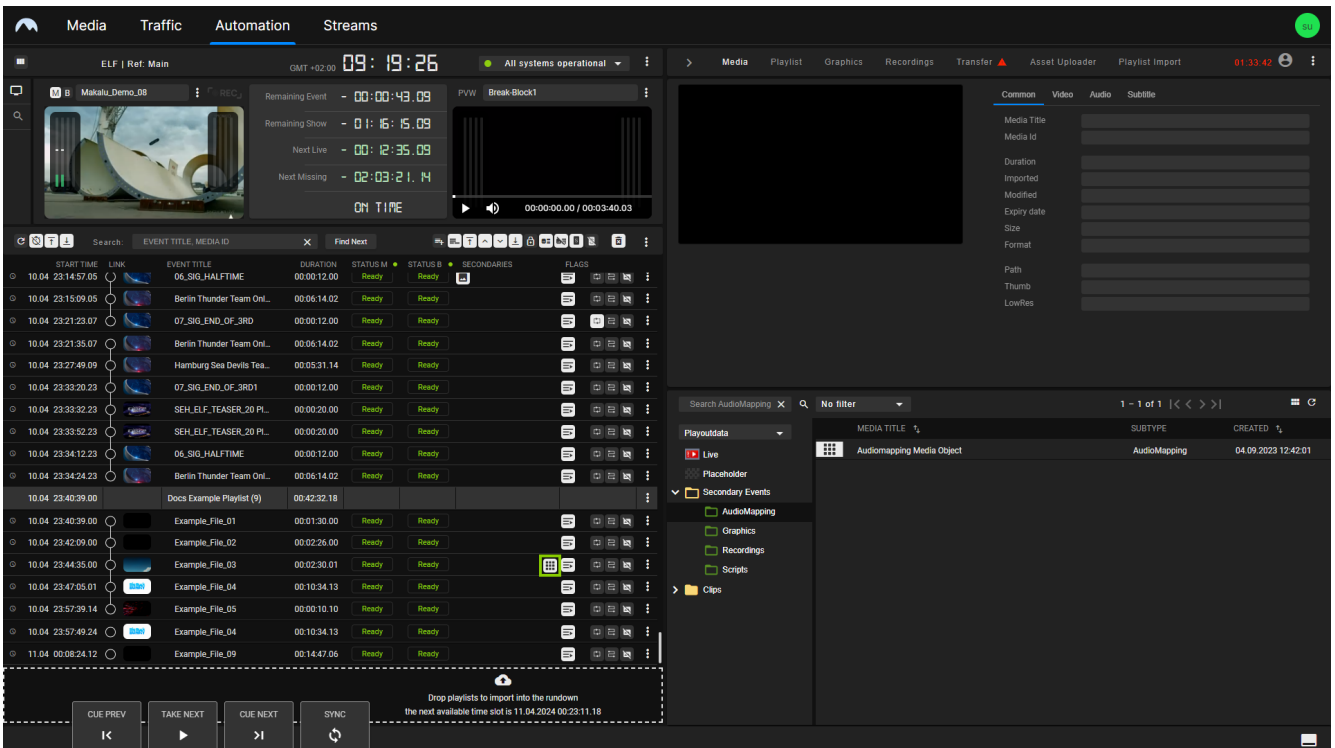
All available audio mapping secondary events are listed.

- Select an audio mapping secondary event and drag it on a show or clip in the rundown.




Automation - Secondary event selected

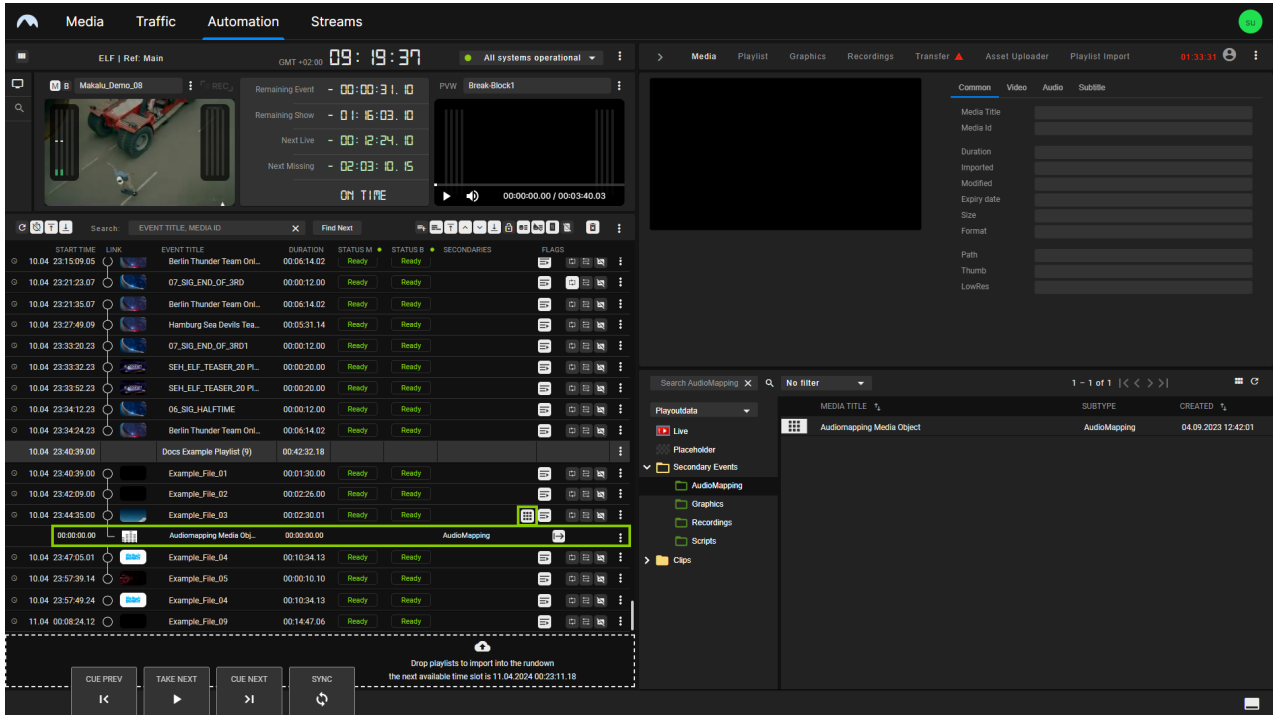
The selected audio mapping secondary event is added to the show or clip, which is indicated by the corresponding icon in the **Secondaries** column. The default settings of the audio mapping secondary event are applied.




Automation - Secondary event added to a clip

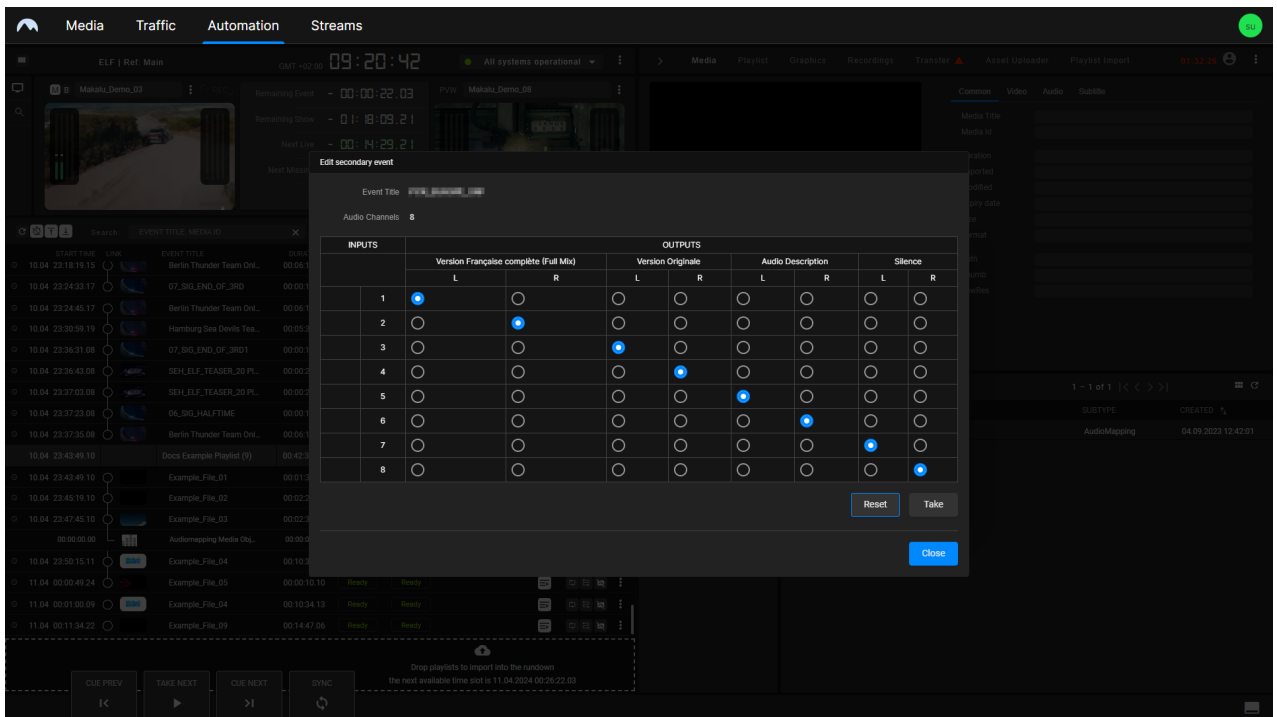
- To edit the settings of the added audio mapping secondary event, proceed as follows:

- a. Expand the list of audio mapping secondary events added to the show or clip, by clicking the **Audio Mapping** icon  in the **Secondaries** column of the corresponding element.



*Automation - Clip secondary event list expanded*

- b. Click the **Options** icon  of the show or clip and select **Edit Secondary**.
- c. Change the audio mapping settings as required, by enabling the output to be used for each corresponding input.



*Automation - Change the audio mapping settings*

- d. To confirm your changes, click **Take**.


The changes are applied in real time by the corresponding player.

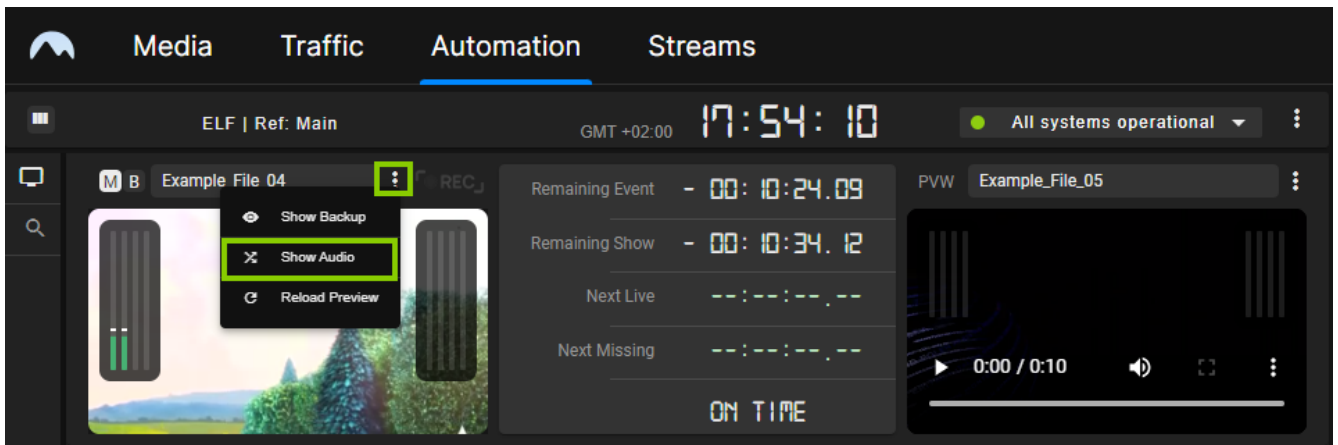
- e. Close the menu, by clicking **Close**.

The selected audio mapping secondary event is added and the settings of the corresponding clip are changed based on your selected inputs and outputs.

## 2.8.4 Using audio mapping for live/on-the-fly changes (via Makalu Automation)

To change the audio mapping settings of the clip currently on-air, proceed as follows:

1. Open the Makalu Automation detailed channel view as described in section [Accessing the detailed channel view](#).
2. In the preview area at the top left, to the right of the clip name display, click the **Options** icon  and select **Show Audio**.



Automation - Open the audio mapping settings

The audio mapping settings menu opens.

3. Change the audio mapping settings as required, by enabling the output to be used for each corresponding input.

Edit secondary event of the running clip

Event Title [REDACTED]


Audio Channels 8

INPUTS		OUTPUTS							
		Version Française complète (Full Mix)		Version Originale		Audio Description		Silence	
		L	R	L	R	L	R	L	R
1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>


*Automation - Change the audio mapping settings*

 **Tip**

To undo your changes and restore the original audio mapping settings of the clip, click **Reset**.

 **Notice**

If the clip does not yet have an audio mapping secondary event, it will be added by your action, which is confirmed by the display of a corresponding note.

 **Notice**

If playback of the current clip ends while you are making changes, you cannot save the changed audio mapping settings. In this case, a corresponding note is displayed. To change the audio mapping settings of the clip that is now being played, first, close the audio mapping menu and then open it again.

4. To confirm your changes, click **Take**.

*The changes are applied in real time by the corresponding player.*

5. Close the menu, by clicking **Close**.

*The audio mapping settings of the clip currently on-air are changed based on your selected inputs and outputs.*

## 3. Technical specifications

### 3.1 Supported formats and codecs

#### 3.1.1 Input

##### Files

Type	Video	Audio
Codec	<ul style="list-style-type: none"> <li>• XAVC</li> <li>• AVC-Ultra</li> <li>• AVC-Intra</li> <li>• XDCAM</li> <li>• MPEG-2</li> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• MPEG-1 L2</li> <li>• MPEG-2 L2</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> </ul>
Container	<ul style="list-style-type: none"> <li>• MXF</li> <li>• MP4</li> </ul>	

##### Streams

Protocol	Video	Audio
RTMP/RTMPS	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• VP6</li> <li>• VP8</li> <li>• Sorenson Spark</li> <li>• Screen Video (v1, v2)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• Speex</li> </ul>
RTSP/RTP	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> <li>• VP8</li> <li>• VP9</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• Speex</li> <li>• Opus</li> <li>• Vorbis</li> </ul>

Protocol	Video	Audio
ICY (SHOUTcast/Icecast)	-	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> </ul>
SRT	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> <li>• ALS (LOAS)</li> </ul>
WebRTC	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• VP8</li> <li>• VP9</li> </ul>	<ul style="list-style-type: none"> <li>• Opus (recommended)</li> <li>• PCM (PCMU, PCMA)</li> </ul>
MPEG-TS, MPEG-TS over UDP	<ul style="list-style-type: none"> <li>• MPEG-2</li> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> <li>• ALS (LOAS)</li> </ul>

### Subtitles

Type	Format
File-based	<ul style="list-style-type: none"> <li>• STL</li> <li>• WebVTT</li> <li>• SRT</li> <li>• EBU-TT</li> <li>• TTML</li> </ul>
Live	<ul style="list-style-type: none"> <li>• EBU-TT-D</li> <li>• FAB Public</li> </ul>



## 3.1.2 Output

## Streams

Protocol	Video	Audio
HLS	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> </ul>
CMAF HLS, Low-Latency HLS	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> </ul>
MPEG-DASH	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> <li>• ALS</li> </ul>
RTMP/RTMPS	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• VP6</li> <li>• Sorenson Spark</li> <li>• Screen Video (v1, v2)</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• Speex</li> </ul>

Protocol	Video	Audio
RTSP/RTP	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> <li>• VP8</li> <li>• VP9</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• Opus</li> <li>• Vorbis</li> <li>• Speex</li> </ul>
SRT	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> <li>• VP8</li> <li>• VP9</li> </ul>	<ul style="list-style-type: none"> <li>• AAC</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• MP3</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> <li>• ALS (LOAS)</li> <li>• Vorbis</li> </ul>
WebRTC	<ul style="list-style-type: none"> <li>• H.264 (AVC)</li> <li>• VP8</li> <li>• VP9</li> </ul>	<ul style="list-style-type: none"> <li>• Opus (recommended)</li> <li>• PCM (PCMU, PCMA)</li> </ul>
MPEG-TS	<ul style="list-style-type: none"> <li>• MPEG-2</li> <li>• H.264 (AVC)</li> <li>• H.265 (HEVC)</li> </ul>	<ul style="list-style-type: none"> <li>• MPEG-1 L2</li> <li>• MPEG-2 L2</li> <li>• AAC-LC</li> <li>• HE-AAC</li> <li>• HE-AAC v2</li> <li>• AC-3 (Dolby Digital)*</li> <li>• E-AC-3 (Dolby Digital Plus)*</li> </ul>

#### CDN service providers

- Akamai
- Fastly
- Microsoft Azure
- Amazon CloudFront
- KeyCDN

### Video and social media platforms

- YouTube
- Facebook
- Twitch
- LinkedIn

#### Notice

All Dolby audio formats (marked with "\*") require the optional Makalu Dolby add-on.

#### Notice

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