

## M2L-X

This guide describes how to use M2L-X (hereinafter referred to as “this system”) to create video by compositing live video input from multiple cameras with video files produced beforehand and how to output the created video.

**Note**

- The images used in this Help Guide may differ from the actual display contents of this system.

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## Features

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### Cloud live production system

This system allows you to operate all-in-one switchers in the cloud. This system creates an event for each virtual switcher. Creation of multiple events is supported, enabling you to perform a wide variety of video production by configuring and managing each event according to the application.

Operation is controlled from web browsers, allowing simultaneous control by multiple operators in different locations. When producing live video, the required setup items are displayed for each operation, providing a visual indication of what you need to do next.

### Scene function

You can save video, composited content, and settings as “scenes” on this system. Scenes can be created beforehand and those saved scenes can be recalled instantly, allowing you to perform on-air operations in a minimum number of steps.

### Input/output

A total of 24 video sources can be used for each event, from among 24<sup>\*</sup> external streaming input videos and four preconfigured video files. Three<sup>\*\*</sup> streaming output destinations can be configured. With appropriate configuration beforehand, live distribution to various video sites can be performed.

\* Can be extended up to 48 using an option license.

\*\* Can be extended up to 33 using an option license.

### Compositing multiple content simultaneously

Six separate elements can be superimposed and composited against a video source (background video). The range of effects can be expanded by using a different layer for each element according to the application and type of content.

- DSK: Composites an image on the upper-most layer of the program output. Two different images can be composited. Compositing input from an external graphics system is also supported. Used to continuously display an image, such as a program logo, or when you entrust the operation of logos and on-screen text to a dedicated operator of an external graphics system.
- KEY: Used to manually show/hide an image to composite against a video. Can be used, for example, to display the name of a reporter or commentator only while the reporter or commentator is on-screen.
- PinP (Picture in Picture): Used to composite up to four separate videos in subscreens against the background video. Can be used, for example, to show the live video while a replay video is simultaneously being displayed full-screen.

### Audio adjustment

This system supports simultaneous handling of video and associated audio. You can adjust and check the volume of each audio source.

### Audio commentary

Up to three audio-only inputs can be configured. Configured audio inputs can be used as audio commentary sources.

### File management function

Video clips and images for use with this system must be uploaded to this system beforehand. Video clips and images are managed separately in each event.

### Tally function

Supports the function for displaying tally on multi-viewers and cameras (TSL-UMD protocol).



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## Supported Devices and Services

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The following devices and services have been verified to connect and operate with this system. For details about other supported devices, contact your dealer.

### Note

- Refer to the Setup Guide for details about configuring each device.

### Input

Supports SRT, RTMP/RTMPS, and NDI High Bandwidth input.

Input from the following devices has been verified.

- ILCE-FR7 Ver. 2.10

### Output

Supports SRT, RTMP/RTMPS, and NDI High Bandwidth output.

Output to the following video distribution services has been verified.

- YouTube Live

### External graphics system

Input from a graphics system that exports HTML5 or NDI High Bandwidth protocol content is supported.

Support for the following graphics systems has been verified.

- Singular.Live

### Note

- Not all operations are guaranteed.

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## Operation Flow

Perform the following procedure to use this system. For details about each operation, refer to the corresponding topics in this Help Guide.

### Hint

- If a problem occurs with drawing the screen while using this system, press the [F5] key on the keyboard to reload the web browser screen display.
- When using this system, it is recommended that you press the [F11] key on the keyboard to display the web browser in full-screen mode.

### Note

- Professional ID for a corporation that has a contract to use this system is required in order to access this system.
- Configure and connect the devices and services used for video input/output beforehand. Refer to the Setup Guide for details about configuring each device.

#### 1 Access the portal screen of this system.

#### 2 Press [Sign in with Professional ID].

#### 3 Enter the ID and password, and press [SIGN IN].

The [Dashboard] screen appears.

### Note

- When signing in for the first time, perform the following steps to use this system.
  - The terms of use are displayed.

#### 4 Create an event.

If using a previously created event, this step is not required.

#### 5 Check/edit the properties of the event.

Rename the event as required.

#### 6 Upload the content to use in the event to this system.

Upload the video clips and images to use in the event to this system beforehand. Video clips and images are managed for each event.

#### 7 Configure streaming for the event.

Configure the streaming settings for the video input source and output destination used in the event. Configure the video format, bit rate, and other settings appropriate for each device and service.

## 8 Start the event.

Start the event for live operation.

### Note

- It may take several minutes to begin operation after starting the event.

## 9 Perform live operations for the event.

On the [Live Operation] screen, you can switch between live video from the device set as the input source or a video clip uploaded beforehand, and perform operations, such as setting keys and audio. You can output the generated video to a device or service configured beforehand.

### Note

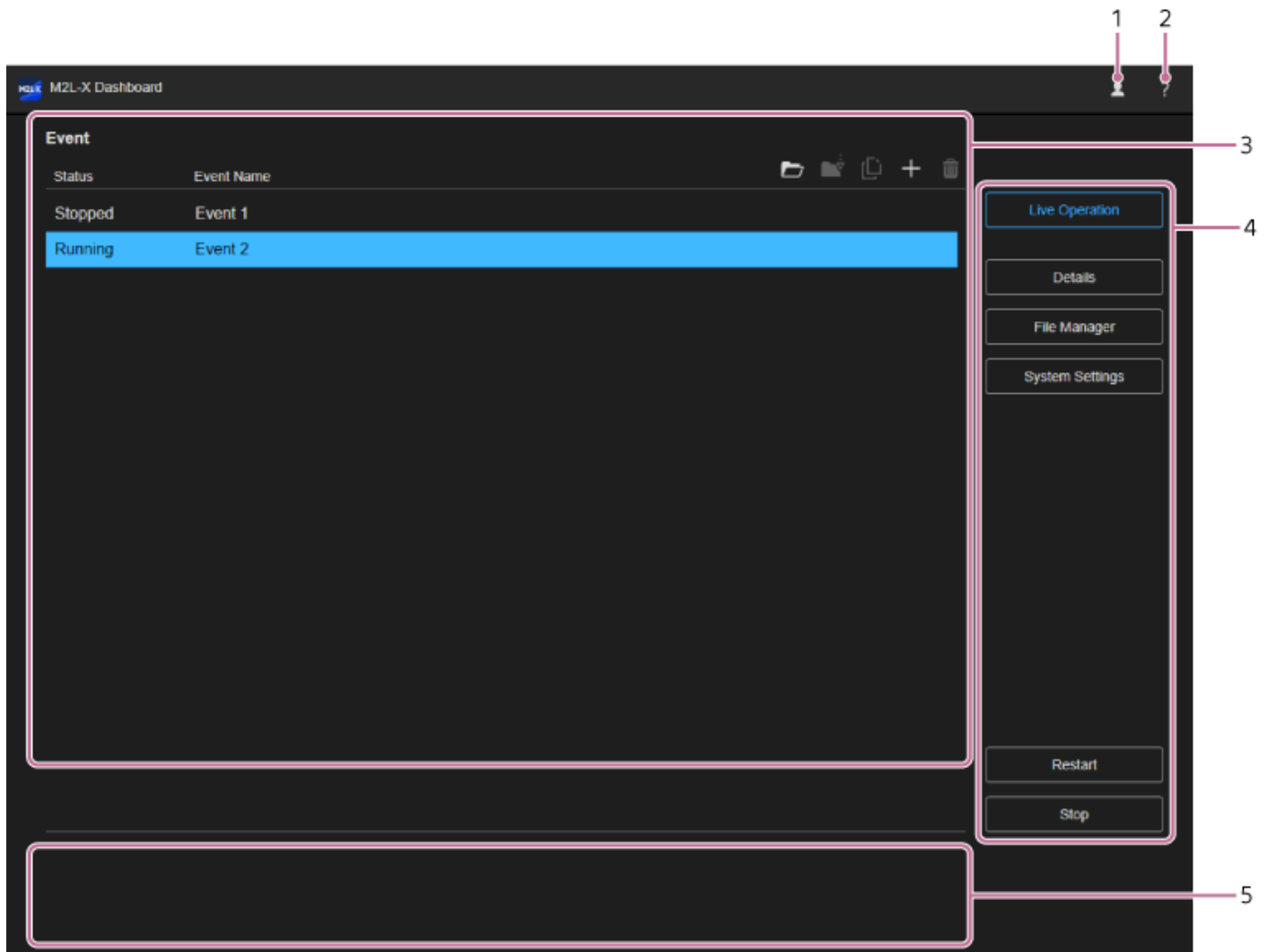
- An event must be started in order to perform live operations.

## 10 Stop the event.

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## Structure of the [Dashboard] Screen







1. **(Account)**: Press the icon to display a drop-down list.

- [License]: Select to display the license registration screen.
- [Update]: Select to display the software update screen.
- [Version]: Select to display the version information of this system.
- [Sign Out]: Select to sign out from this system.

2. **(Help Guide)**: Select to display this Help Guide.

3. **Event list**: Displays the list of created events.

- **[Status]**: Displays the status of each event.
  - “Stopped”: Event is in the stopped state.
  - “Starting”: Event is starting.
  - “Running”: Event is in the running state.
  - “Stopping”: Event is stopping.
  - “Failed”: Failed to run or stop the event. Try the operation again.
- **[Event Name]**: Displays the name of the event.
- **(Restore)**: Use to create an event using a backup config file. If an event that was the source of the backup still exists, the event settings are overwritten.

-  (**Backup**): Use to save the settings for the event selected in the list.
-  (**Copy**): Use to duplicate the event selected in the list.
-  (**Create New**): Use to create an event.
-  (**Delete**): Use to remove the event selected in the list.

**4. Operation buttons:** Buttons for performing operations on the selected event in the list.

- **[Live Operation] button:** Use to initiate live operation for the event. The [Live Operation] screen will appear. Available when the event is in the “Running” state.
- **[Details] button:** Use to check/edit the properties of the event. The [Details] screen will appear in a separate tab.
- **[File Manager] button:** Use to manage the content (video clips or images) used in the event. The [File Manager] screen will appear in a separate tab.
- **[System Settings] button:** Use to configure the video input source and output destination devices and services used in the event. The [System Settings] screen will appear in a separate tab.
- **[Restart] button:** Use to restart the event.
- **[Start]/[Stop] button:** Use to start/stop the event. The label switches between [Start] and [Stop] according to the status of the event.

**5. License information:** Displays a warning when the license in use will expire in less than 14 days.

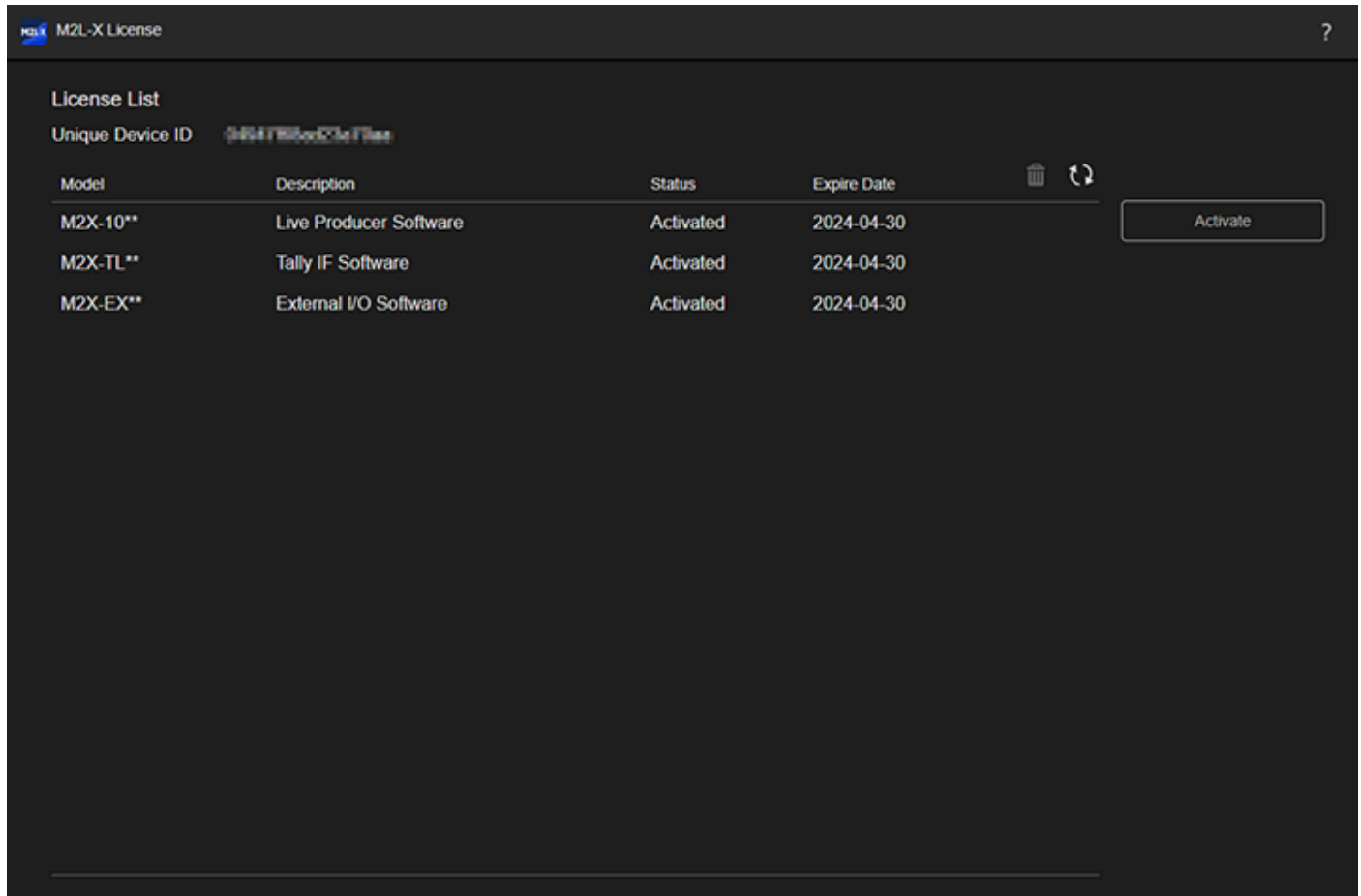
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## Managing License Information

A software license must be activated in order to use this system. Software license activation is performed on the [License List] screen.




- 1 Obtain a software license (.DAT file) issued via ULMS for operating this system and place it on your computer.
- 2 Press  (Account) > [License] on the [Dashboard] screen.  
The [License List] screen appears.
- 3 Press the [Activate] button.  
The [Activate License] dialog appears.
- 4 Press the [Browse] button.
- 5 Select the license that you want to activate from among the software licenses (.DAT files) on the computer.  
The license file is uploaded and activated. When activation is completed, the selected license is displayed in the license list on the [License List] screen.

### Note

- Do not close the [License List] screen until after uploading and activation has been completed. If you close the [License List] screen, uploading and activation are terminated.
- Once a license has been activated, you cannot return to the state that existed prior to activation.

### To delete a software license

You can delete an expired software license from the license list. Select a software license for which “Expired” is displayed in the [Status] field of the license list, and press  (Delete). Press the [OK] button in the confirmation dialog to delete the selected software license.

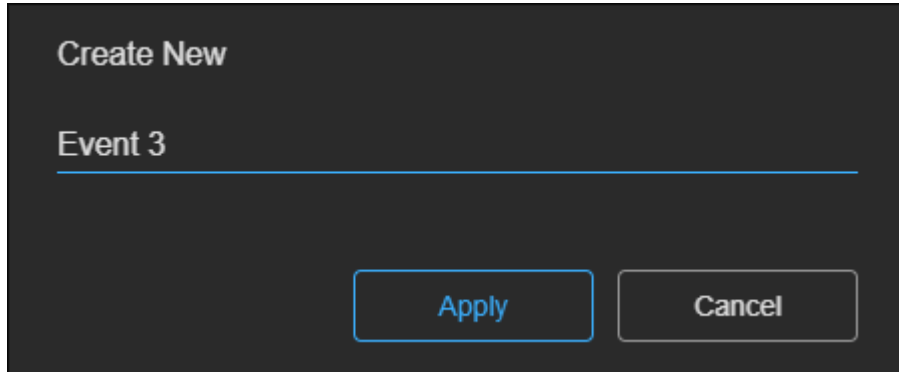
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## Creating and Deleting an Event

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- 1 Press **+** (Create New) on the [Dashboard] screen.



- 2 In the dialog that appears, set the event name.

- 3 Press the [Apply] button.

The event is created and is added to the event list.

### To delete an event


Select the event you want to delete in the event list and press **⌫** (Delete). Press [YES] in the confirmation dialog to delete the event.

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## Backing Up/Restoring/Copying an Event

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### Backing up an event

Select an event that you want to back up in the event list on the [Dashboard] screen and press  (Backup). In the dialog that appears, specify a save destination folder and save the event. A backup file for the event is created.

#### Note

- Uploaded content is not backed up.


### Restoring an event

Press  (Restore) on the [Dashboard] screen. In the dialog that appears, specify the backup file of the event you want to restore and restore the event. The event is added to the event list.

#### Note

- If the event that is the source of the backup file still exists in the event list, the event settings are overwritten.
- For a scene that includes content, recreate the scene after restoring the event.

### Copying an event

Select an event that you want to copy in the event list on the [Dashboard] screen and press  (Copy). Press [YES] in the dialog that appears to copy the event.

#### Note

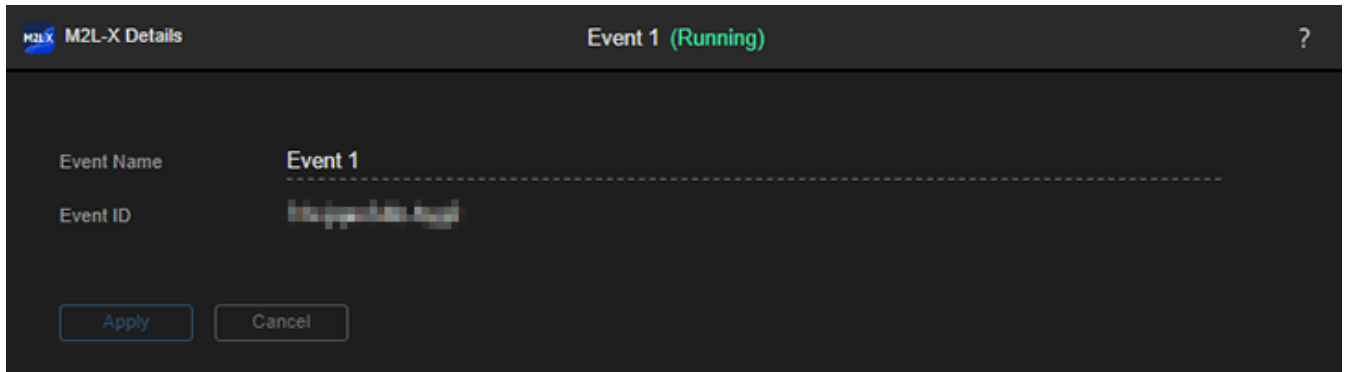
- Uploaded content is not copied.
- For a scene that includes content, recreate the scene after copying the event.

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## Checking/Editing Event Properties

- 1 Select an event on the [Dashboard] screen and press the [Details] button.

The [Details] screen appears in a separate tab and displays the properties of the selected event.



- 2 Check the properties of the event and edit as required.

Properties can be edited only when the selected event is in the “Stopped” state.

- [Event Name]: Displays the name of the event. You can select the name to rename the event.
- [Event ID]: Displays the ID of the event. Cannot be modified.

- 3 When finished editing, press the [Apply] button.

The changes are applied.

## Starting an Event and Starting Live Operation

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### Hint

- An input source and output destination must be configured beforehand in order to start an event. Configure settings on the [Router Input] tab, [Switcher Input] tab, and [Output] tab of the [System Settings] screen.
- Multiple events cannot be started at the same time. If a different event is already running, stop it and then start the desired event.

### 1 To start an event, select an event on the [Dashboard] screen and press the [Start] button.

The event status changes to “Starting” and the starting process begins. When the starting process is completed, the event status changes to “Running.”

### 2 To perform live operation of an event, select a running event and press the [Live Operation] button.

The [Live Operation] screen appears.

## To stop an event

Select a running event and press the [Stop] button. The event status changes to “Stopping” and the stopping process begins. When the stopping process is completed, the event status changes to “Stopped.”

### Note

- In rare cases where the status remains “Starting,” you can forcibly cancel the event by pressing the [Cancel] button. Note that tasks may not be completed successfully if there is a task in progress (including background operations) when forcibly canceled.

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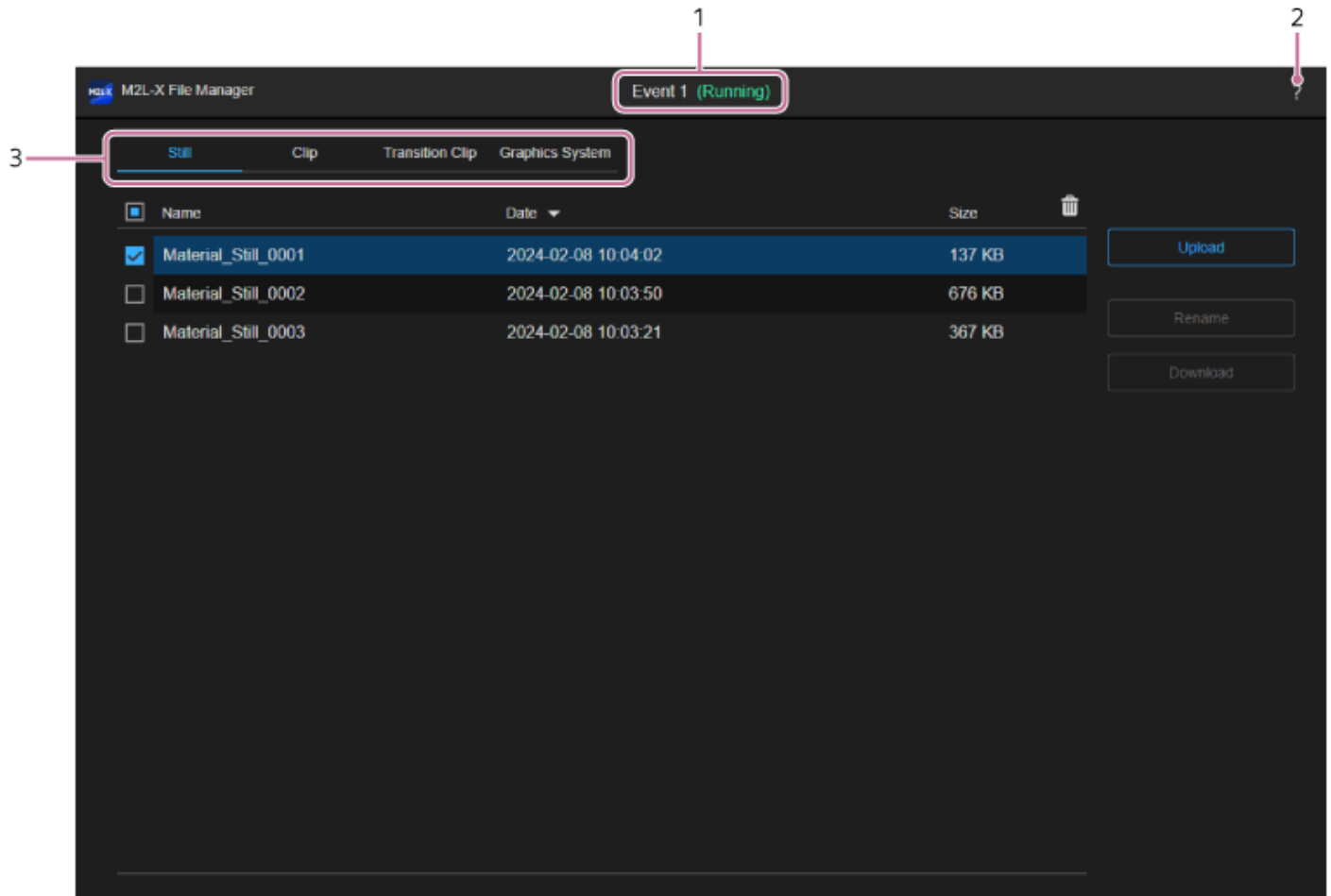
## Related Topic

- [Structure of the \[Live Operation\] Screen](#)

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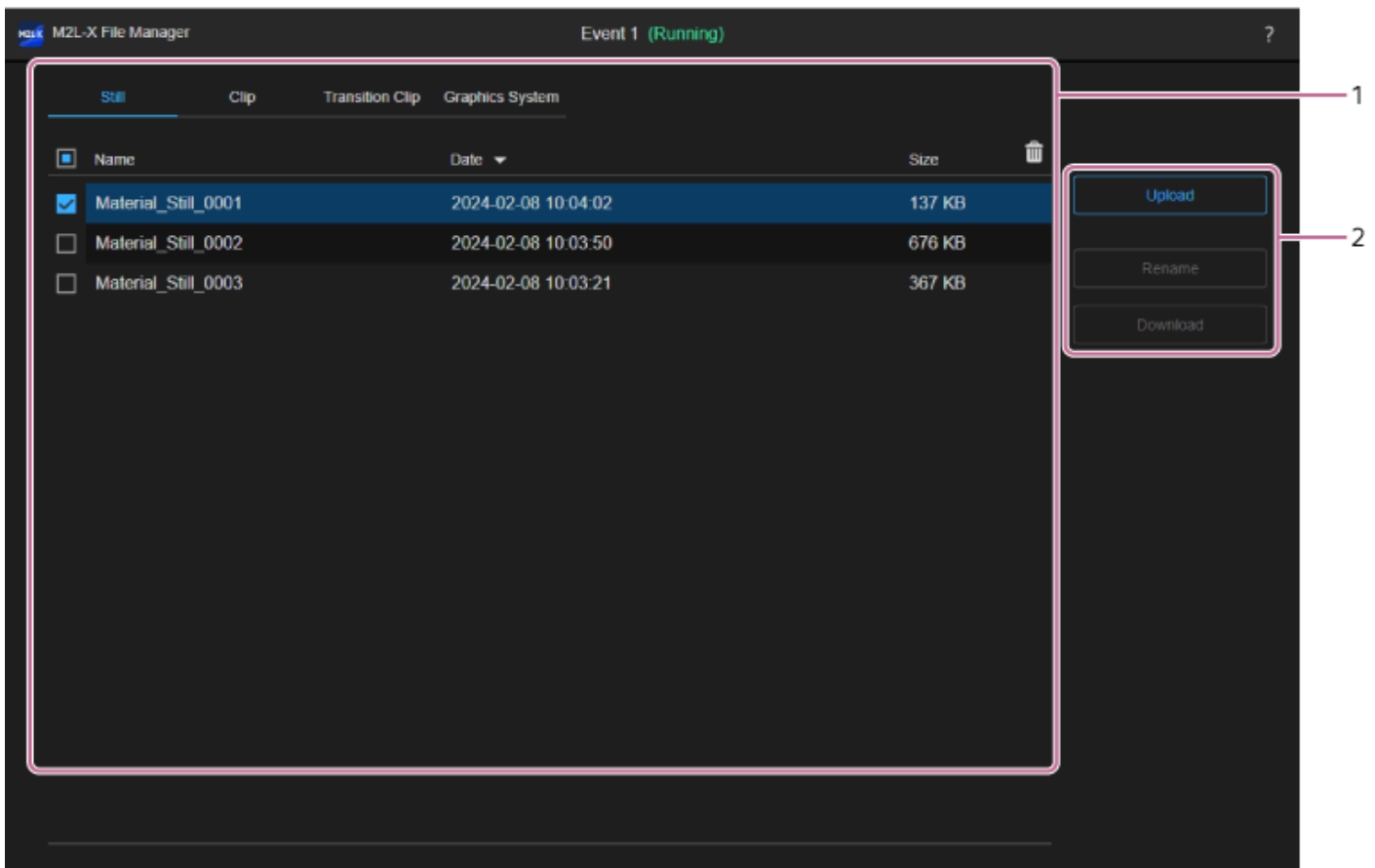


## Structure of the [File Manager] Screen



1. **Event name/status display:** Displays the name/status of the event for which the [File Manager] screen was opened.
2. **? (Help Guide):** Select to display this Help Guide.
3. **Content type tabs:** Press a tab to switch the file list display contents.
  - **[Still]:** Displays a list of uploaded images for the event.
  - **[Clip]:** Displays a list of uploaded video clips for the event.
  - **[Transition Clip]:** Displays a list of animations for transitions for the event.
  - **[Graphics System]:** Sets an external graphics system to use in this system.

### [Still] tab



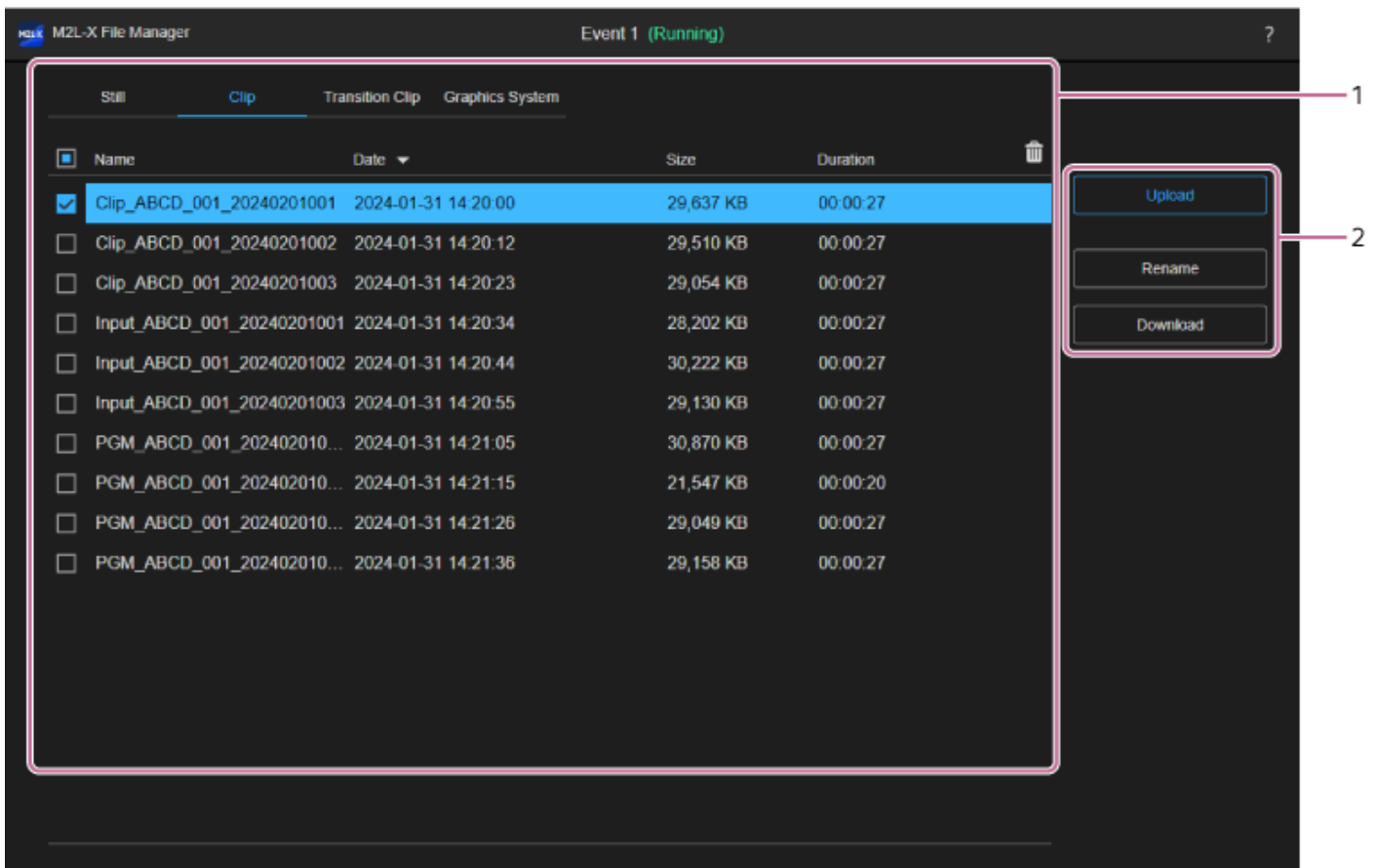
1. **File list:** Displays a list of files (video clips or still images) corresponding to each tab.

- **Checkbox:** Place a check mark in the checkbox for files you want to delete. You can press the checkbox at the top of the list to add or clear the check marks for all files in the list.
- **[Name]:** Displays the name of each file. You can press the [Name] label at the top of the list to change the sort order alphabetically. Each press changes the sort order between ascending and descending.
- **[Date]:** Displays the upload date and time of each file. You can press the [Date] label at the top of the list to change the sort order by the upload date and time. Each press changes the sort order between ascending and descending.
- **[Size]:** Displays the file size of each file. You can press the [Size] label at the top of the list to change the sort order by the file size. Each press changes the sort order between ascending and descending.
- **(Delete):** Use to remove the files selected in the list.

2. **Operation buttons:** Buttons for performing operations on files.

- **[Upload] button:** Use to upload files.
- **[Rename] button:** Use to rename the file selected in the list.
- **[Download] button:** Use to download the files selected in the list.

**[Clip] tab, [Transition Clip] tab**



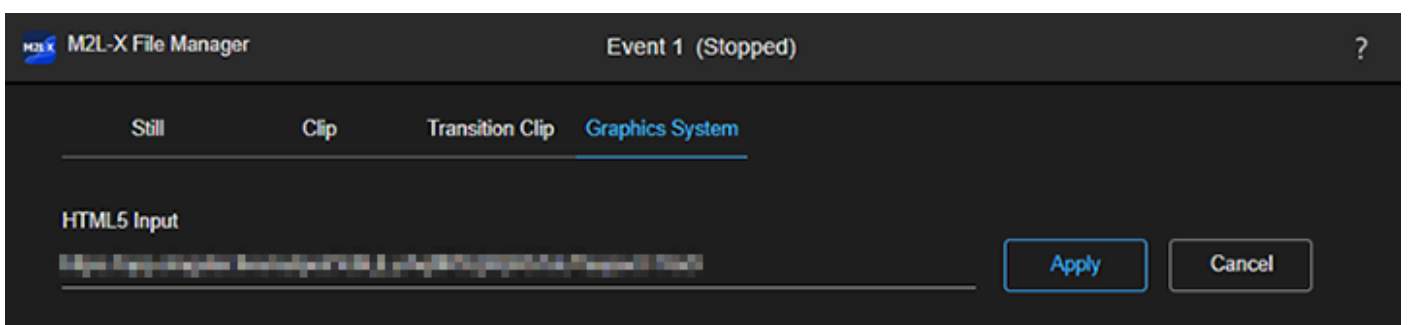
1. **File list:** Displays a list of files (video clips or still images) corresponding to each tab.

- **Checkbox:** Place a check mark in the checkbox for files you want to delete. You can press the checkbox at the top of the list to add or clear the check marks for all files in the list.
- **[Name]:** Displays the name of each file. You can press the [Name] label at the top of the list to change the sort order alphabetically. Each press changes the sort order between ascending and descending.
- **[Date]:** Displays the upload date and time of each file. You can press the [Date] label at the top of the list to change the sort order by the upload date and time. Each press changes the sort order between ascending and descending.
- **[Size]:** Displays the file size of each file. You can press the [Size] label at the top of the list to change the sort order by the file size. Each press changes the sort order between ascending and descending.
- **[Duration]:** Displays the length of each file. You can press the [Duration] label at the top of the list to change the sort order by the length. Each press changes the sort order between ascending and descending.
- **🗑️ (Delete):** Use to remove the files selected in the list.

2. **Operation buttons:** Buttons for performing operations on files.

- **[Upload] button:** Use to upload files.
- **[Rename] button:** Use to rename the file selected in the list.
- **[Download] button:** Use to download the files selected in the list.

## [Graphics System] tab



Sets the URL of an external graphics system to input to this system.

Cannot be modified when the event is in the “Running” state.

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## Supported Content Types

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This system supports the following content.

### Images

Uploaded images or images input from an external graphics system can be composited for use as a logo or other on-screen display. Also, a series of PNG images compressed in ZIP format can be used as an animation for a transition.

#### Supported images

- File format: RGB 24-bit (32-bit with alpha channel) JPEG or PNG format
- Image size: 1920×1080 (max)

#### Note

- An alpha channel is supported. When an image without an alpha channel is used as a key, the whole image is used as a key.
- Images that exceed the maximum size can also be uploaded to this system. However, when such an image is used as a key, the portions that exceed the maximum size are cropped on the right and bottom sides.

#### Supported animations for transitions

- File format: RGB 24-bit (32-bit with alpha channel) series of PNG images compressed in ZIP format\*
- Number of images: 300 (max)
- Image size: 1920×1080 (max) (each PNG file is the same image size)

\* A transition animation is created by displaying ZIP-compressed PNG images consecutively in numerical order.

#### Supported external graphics systems

Graphics system input using HTML5 is supported.

#### Note

- Currently, Singular.Live is the only external graphics system whose operation with this system has been verified. However, not all operations are guaranteed.

### Video

Uploaded video files can be assigned to a clip player and used for video production.

#### Supported video clip specifications

- File format: MP4 (AVC standard only)\*
  - \* Fragmented MP4 is not supported.
- Video
  - Color depth: 8 bits
  - Color space: YCbCr 4:2:0
  - Color gamut: Rec. 709
  - Scan type: Progressive
  - Resolution: Full HD
  - Frame rate: 50, 59.94 (fps)
  - Video compression format: H.264

- GOP size: 120 (max)
- Audio
  - Audio compression format: AAC
  - Sampling frequency: 48 kHz
  - Number of quantization bits: 16 bits, 24 bits
  - Monaural audio, stereo audio
- Maximum bit rate: 50 Mbps
- File size: Unlimited

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## Uploading/Downloading/Deleting Files

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### To upload files

**Note**

- Uploaded files are managed separately in each event. To use a file in multiple events, upload the file separately for each event.

- 1 Prepare the files you want to upload on the computer used to operate this system.**
- 2 Select the tab corresponding to the type of file you want to upload on the [File Manager] screen.**

Select the [Still] tab to upload image files, select the [Clip] tab to upload video clip files, or select the [Transition Clip] tab to upload animations for transitions.  
The file list for the selected tab appears.
- 3 Press the [Upload] button.**
- 4 Select and apply the files that you want to upload to this system on the computer.**

The files are uploaded and are displayed in the file list.

**Note**

- Do not close the [File Manager] screen until after uploading of files has been completed. Uploading will be terminated if you close the [File Manager] screen while uploading is in progress.

### To download files to an external destination

Select the row for the file you want to download in the file list and press the [Download] button. A save destination selection dialog appears. Select and apply a save destination to start the download.

**Note**

- Multiple files cannot be downloaded simultaneously.
- If the name of the content file contains characters that are not supported on the download destination computer, the unsupported characters are replaced by an underscore (\_) character.

### To delete files

Place a check mark in the checkbox of the files you want to delete and press  (Delete). Press the [YES] button in the confirmation dialog to delete the selected files.

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### Related Topic

- [Assigning a Video to a Clip Player](#)





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## Renaming a File

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To rename a file, select the file on the corresponding tab of the [File Manager] screen and press the [Rename] button. Enter a new file name in the dialog that appears and press the [Apply] button to rename the content file.

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## Setting an External Graphics System

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**Note**

- External graphics system settings cannot be modified when the event is in the “Running” state.
- Currently, Singular.Live is the only external graphics system whose operation with this system has been verified. However, not all operations are guaranteed.

On the [Graphics System] tab of the [File Manager] screen, register the URL for graphics output from the external graphics system you want to use and press the [Apply] button. Input from a configured external graphics system can be composited on the video as a DSK.

For details about how to use an external graphics system, refer to the operating instructions for the external graphics system.

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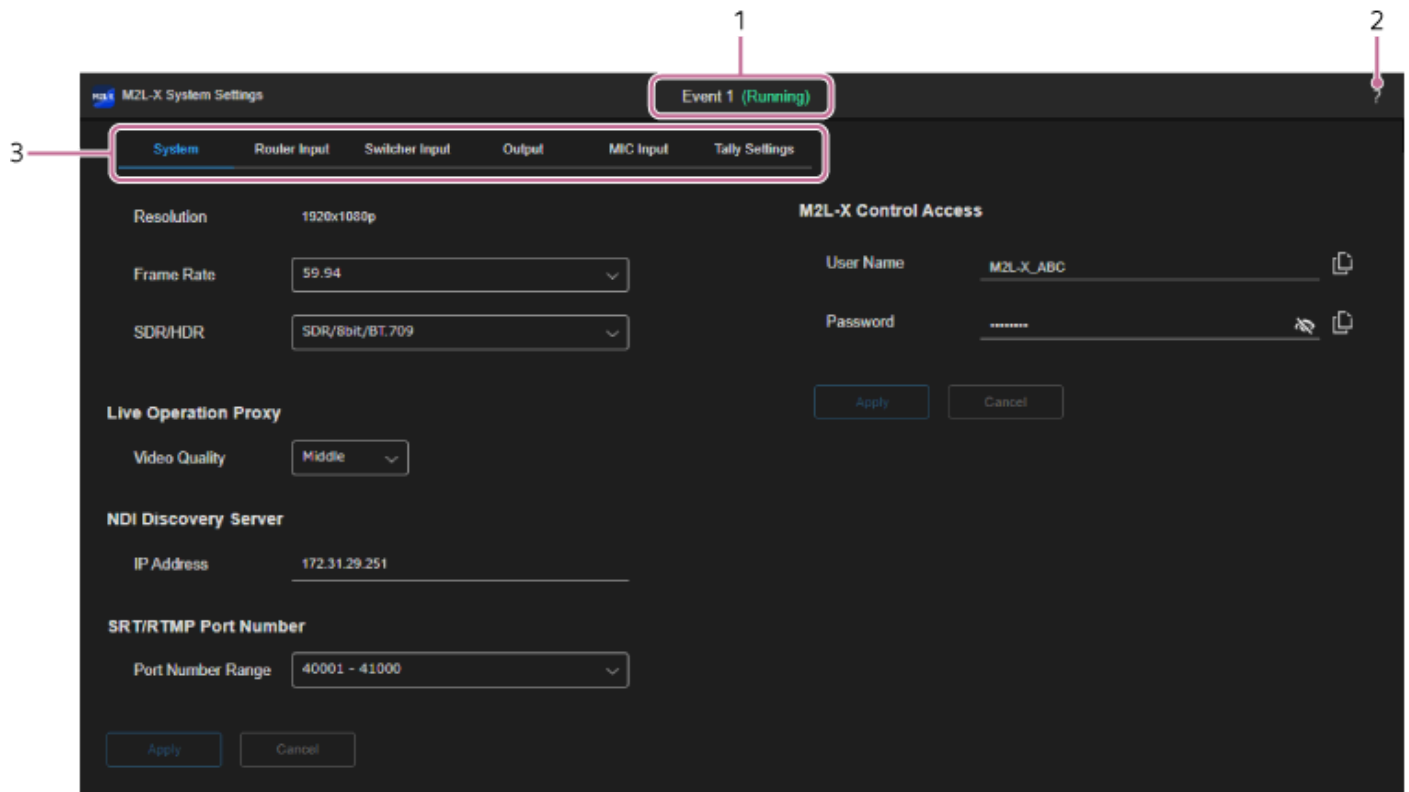
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**Related Topic**

- [Setting a DSK](#)

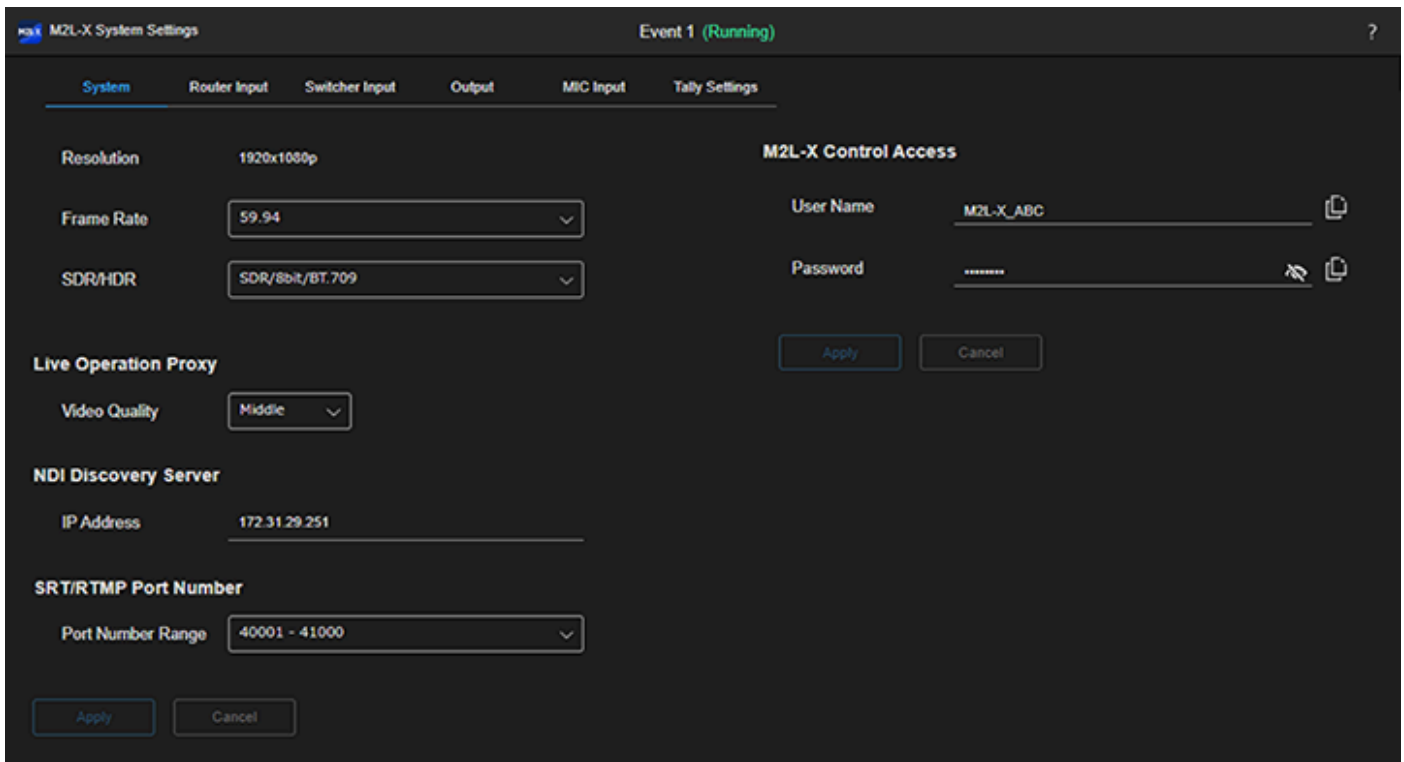
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## Structure of the [System Settings] Screen



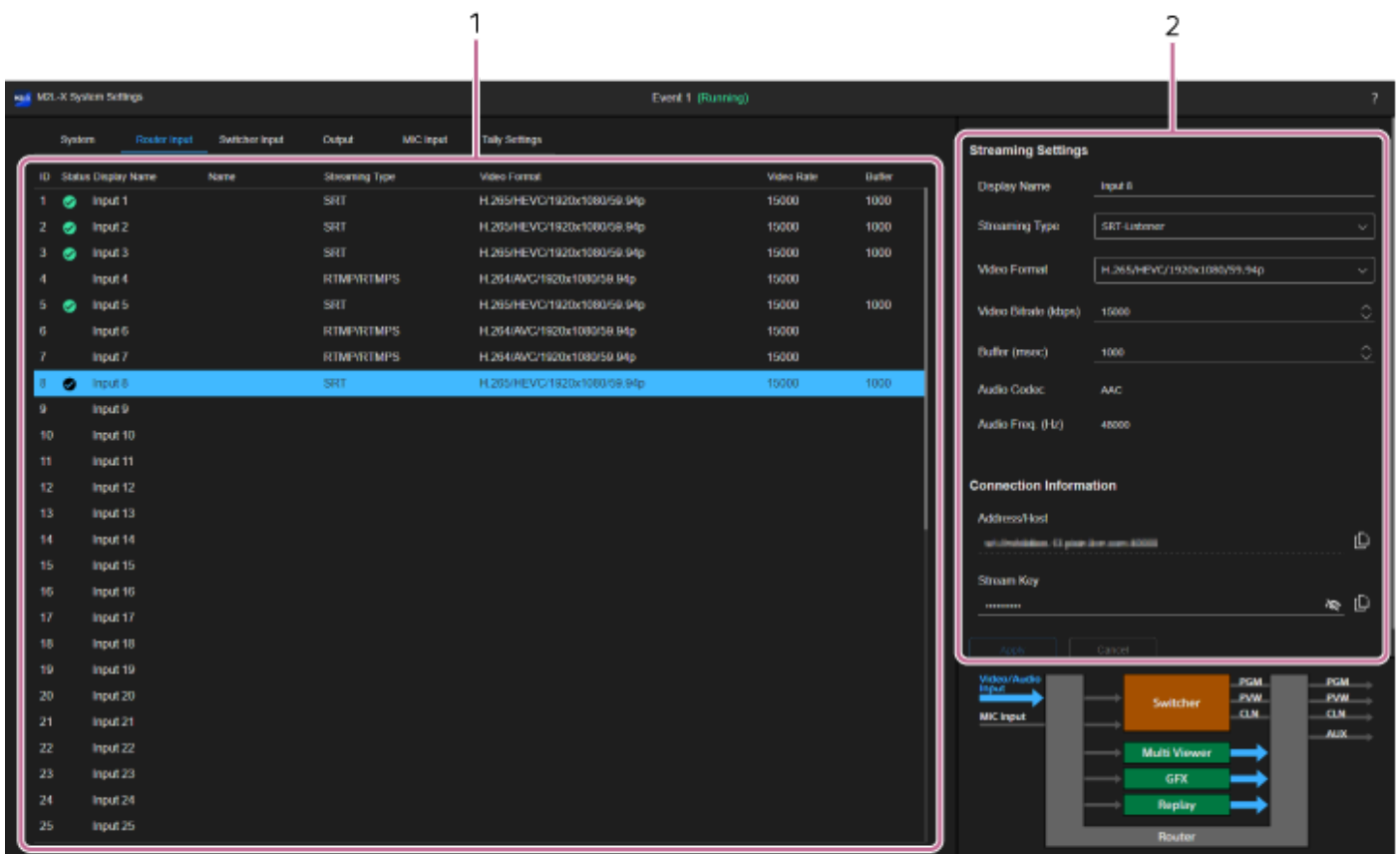
1. **Event name/status display:** Displays the name/status of the event for which the [System Settings] screen was opened.
2. **? (Help Guide):** Select to display this Help Guide.
3. **Category tabs:** Press a tab to switch the display contents.
  - **[System]:** Displays the resolution, frame rate, and other system settings. Also used to configure settings.
  - **[Router Input]:** Displays the status of streaming input source devices (router inputs) assigned to the event. Also used to set the input source device.
  - **[Switcher Input]:** Displays the status of video sources (switcher inputs) used for live production for an event. Also used to assign and configure switcher inputs.
  - **[Output]:** Displays the status of streaming output destination devices or services assigned to the event. Also used to set the output destination device or service.
  - **[MIC Input]:** Displays the status of audio input source devices assigned to the event for adding audio commentary. Also used to set the audio input source device.
  - **[Tally Settings]:** Displays the tally link status between this system and external devices. Also used to configure tally settings (option license is required).

### [System] tab



Use to configure event system settings and connection settings.

## [Router Input] tab



1. **Router input source list:** Displays the status of the router inputs. Up to 24 (or 48 when using an option license) input source devices can be assigned.

- **[ID]:** A number is automatically assigned to each row starting from the top.
- **[Status]:** Displays the streaming status using icons.
  - **(Normal):** Streaming input in progress.
  - **(Caution):** Streaming input in progress in a state that differs from the configured settings.
  - **(Error):** Streaming input stopped or an error occurred after streaming had been in progress.

- No display: No streaming input.
  - **[Display Name]**: Displays the name specified when the device was assigned.
  - **[Name]**: Blank. Reserved for use in a future version.
  - **[Streaming Type]**: Displays the streaming type.
  - **[Video Format]**: Displays the video format.
  - **[Video Rate]**: Displays the video bit rate (Unit: kbps).
  - **[Buffer]**: Displays the buffer size (Unit: milliseconds).
2. **[Streaming Settings]**: Use to change the settings for the row selected in the list on the left side.

## [Switcher Input] tab

The screenshot shows the 'M2L-X System Settings' interface for 'Event 1 (Running)'. The 'Switcher Input' tab is active, displaying a list of 24 inputs. The second input (ID 2) is selected. To the right, the 'Input Settings' dialog is open, showing the configuration for 'SWR IN 2'. The 'Streaming Source' is set to 'Router' and the 'Source Signal' is '2: Input 2'. Below the dialog is a block diagram of the router's internal processing flow.

ID	Status	Port	Source Signal
1		SWR IN 1	1: Input 1
2		SWR IN 2	2: Input 2
3		SWR IN 3	3: Input 3
4		SWR IN 4	4: Input 4
5		SWR IN 5	5: Input 5
6		SWR IN 6	6: Input 6
7		SWR IN 7	7: Input 7
8		SWR IN 8	8: Input 8
9		SWR IN 9	9: Input 9
10		SWR IN 10	10: Input 10
11		SWR IN 11	11: Input 11
12		SWR IN 12	12: Input 12
13		SWR IN 13	13: Input 13
14		SWR IN 14	14: Input 14
15		SWR IN 15	15: Input 15
16		SWR IN 16	16: Input 16
17		SWR IN 17	17: Input 17
18		SWR IN 18	18: Input 18
19		SWR IN 19	19: Input 19
20		SWR IN 20	20: Input 20
21		SWR IN 21	21: Input 21
22		SWR IN 22	22: Input 22
23	✔	SWR IN 23	Clip Player 1
24	✔	SWR IN 24	Clip Player 2

**Input Settings**

Port: SWR IN 2

Streaming Source: Router

Source Signal: 2: Input 2

Buttons: Apply, Cancel

**Router Diagram:** Video/Audio Input and MIC Input feed into a Switcher. The Switcher outputs to PGM, PVW, and CLN. Below the Switcher are Multi Viewer, GFX, and Replay modules. The Router outputs to PGM, PVW, CLN, and AUX.

1. **Switcher input source list**: Displays the status of each switcher input. Up to 24 switcher inputs can be assigned.
- **[ID]**: A number is automatically assigned to each row starting from the top.
  - **[Status]**: Displays the streaming status using icons.
    - **(Normal)**: Streaming input in progress.
    - **(Caution)**: Streaming input in progress in a state that differs from the configured settings.
    - **(Error)**: Streaming input stopped or an error occurred after streaming had been in progress.
    - No display: No streaming input.

### Note

- If the NDI stream stops while an NDI signal is being input, the stoppage cannot be detected.

- **[Port]**: Displays the port number of the switcher input.
- **[Source Signal]**: Displays the name of the signal assigned to the switcher input.

2. **[Input Settings]**: Use to change the settings for the row selected in the list on the left side.

## [Output] tab

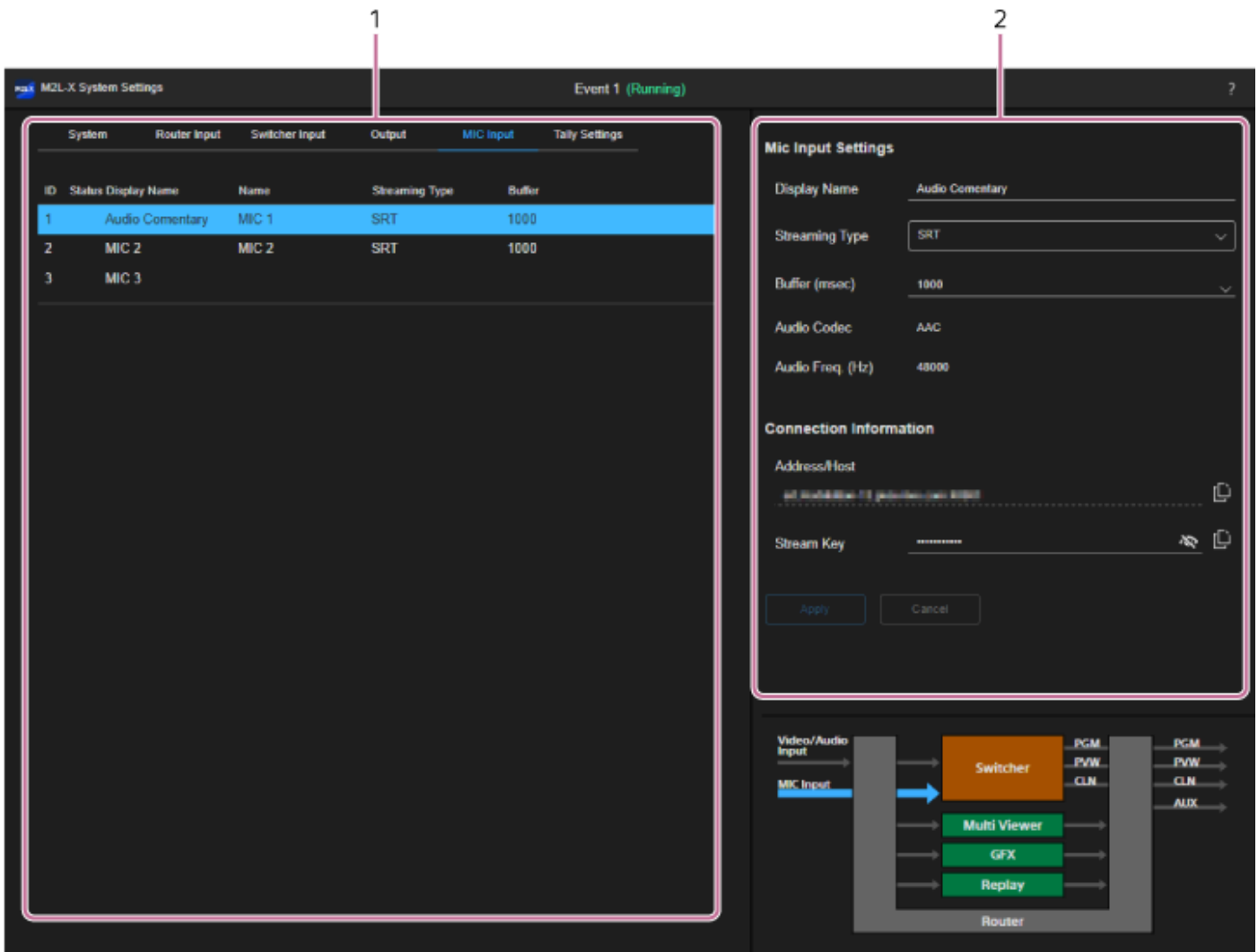
1. **Output destinations list:** Displays the status of streaming output destination devices or services assigned to the event. Up to three (or 33 when using an option license) output destination devices or services can be assigned.

- **[ID]:** A number is automatically assigned to each row starting from the top.
- **[Status]:** Displays the streaming status using icons.
  - **(Normal):** Streaming output in progress.
  - **(Error):** Streaming output stopped due to an error or other cause.
  - No display: No streaming output.

- **[Display Name]:** Displays the name specified when the device or service was assigned.
- **[Streaming Type]:** Displays the streaming type.
- **[Video Format]:** Displays the video format.
- **[Video Rate]:** Displays the video bit rate (Unit: kbps).
- **[Buffer]:** Displays the buffer size (Unit: milliseconds).
- **[Streaming]:** Press the [Start] button to start streaming output and press the [Stop] button to stop streaming output. The label switches between [Start] and [Stop] according to the status of the streaming output. During streaming output, (Streaming output) is displayed on the left side of the button. Also, for output destinations with [ID] of “4” to “33” that have [Start/Stop All] enabled, [ALL] is displayed on the left side of the button.
- **[Source Signal]:** Displays the streaming output source.
- **[NDI Output] ([ID] of “1” to “3” list only):** Displays the status of simultaneous output to NDI.
- **[Start All] button/[Stop All] button:** Use to start/stop all streaming outputs. Only output destinations with [ID] of “4” to “33” for which [Start/Stop All] is enabled can be operated in unison.

2. **[Output Settings]:** Use to change the settings for the row selected in the list on the left side.

## [MIC Input] tab

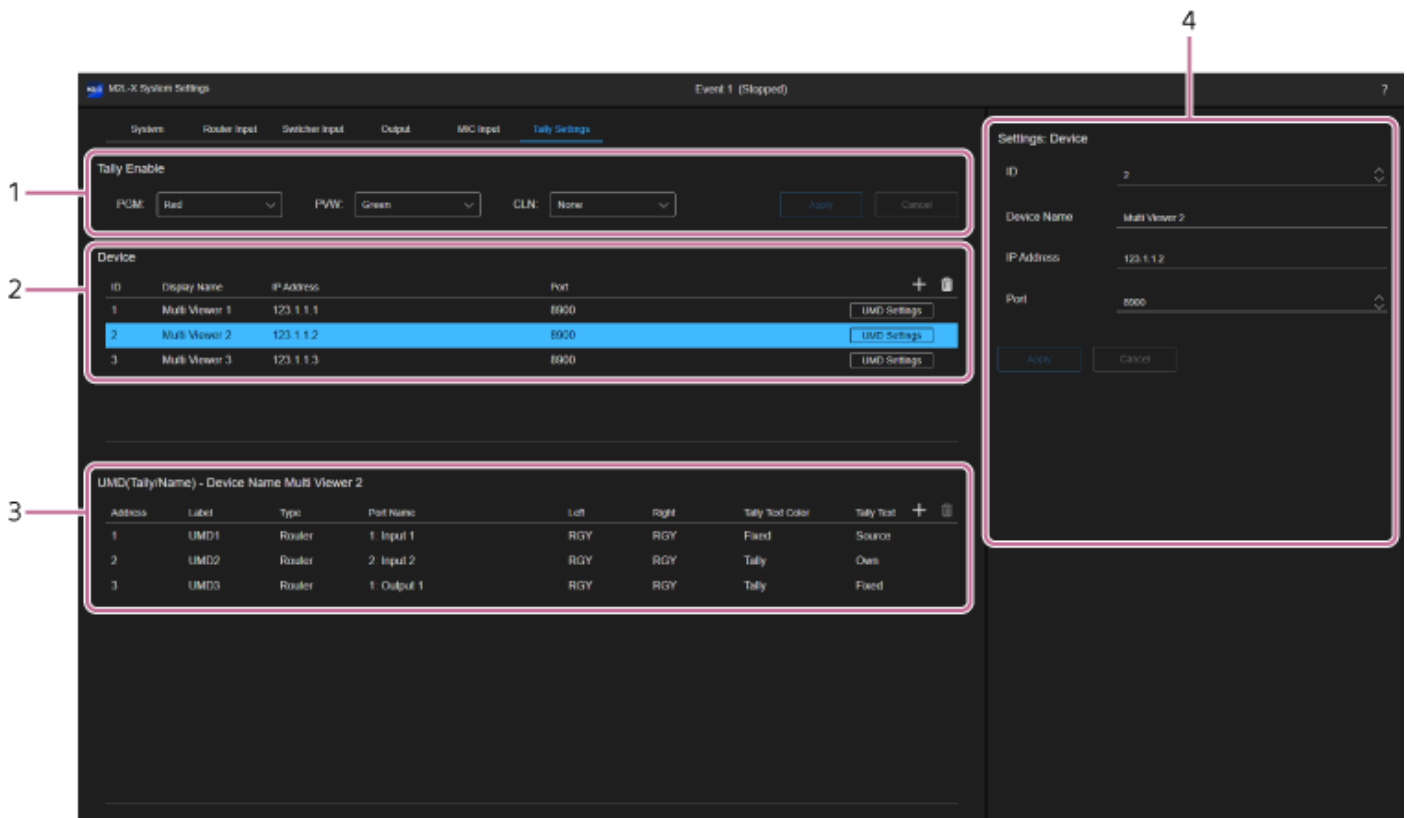


1. **Audio input sources list:** Displays the status of audio input source devices assigned to the event for adding audio commentary. Up to three audio input source devices can be assigned.

- **[ID]:** A number is automatically assigned to each row starting from the top.
- **[Status]:** Displays the streaming status using icons.
  - **(Normal):** Streaming input in progress.
  - **(Error):** Streaming input stopped or an error occurred after streaming had been in progress.
  - No display: No streaming input.
- **[Display Name]:** Displays the name of the MIC input.
- **[Name]:** Displays [MIC 1] to [MIC 3].
- **[Streaming Type]:** Displays the streaming type.
- **[Buffer]:** Displays the buffer size (Unit: milliseconds).

2. **[MIC Input Settings]:** Use to change the settings for the row selected in the list on the left side.

## [Tally Settings] tab



1. **[Tally Enable]**: Allows you to specify the outputs for which the tally lamp is enabled and the tally color.
2. **[Device] list**: Displays the registered tally display devices. You can also add/delete tally display devices using **+** (Add) and **🗑️** (Delete).
  - **[ID]**: Displays the ID specified during registration.
  - **[Display Name]**: Displays the name of the tally display device specified during registration.
  - **[IP Address]**: Displays the IP address of the tally display device specified during registration.
  - **[Port]**: Displays the port number used for TSL UMD protocol communication specified during registration.
  - **[UMD Settings]**: Press the button to select a UMD in the [UMD (Tally/Name)] list.
3. **[UMD (Tally/Name)] list**: Displays the registered UMDs. You can also add/delete a UMD using **+** (Add) and **🗑️** (Delete).
  - **[Address]**: Displays the address of the UMD specified during registration.
  - **[Label]**: Displays the name of the UMD specified during registration.
  - **[Type]**: Displays the service to display for the UMD.
  - **[Port]**: Displays whether tally is displayed for the input connector or output connector of the service selected using [Type].
  - **[Port Name]**: Displays the port number of the connector for which tally is displayed.
  - **[Left]**: Displays the color to display for the UMD Left tally.
  - **[Right]**: Displays the color to display for the UMD Right tally.
  - **[Tally Text Color]**: Displays the color to display for UMD text (Center).
  - **[Tally Text]**: Displays the type of text to display for the UMD.
4. **[Settings]**: Use to change the settings for the row selected in the [Device] list or [UMD (Tally/Name)] list on the left side.



## M2L-X

## Configuring the System

### Configuration method

Configure each item on the [System] tab of the [System Settings] screen. When finished configuring items, press the [Apply] button to apply the settings. Setup items on the [System] tab are subdivided into system settings and [M2L-X Control Access] settings, each having an [Apply] button.

#### Note

- [M2L-X Control Access] settings should only be modified by a system administrator. Modifying settings may disable access to this system from your web browser.

### Setup items

M2L-X System Settings Event 1 (Running)

System Router Input Switcher Input Output MIC Input Tally Settings

Resolution 1920x1080p

Frame Rate 59.94

SDR/HDR SDR/8bit/BT.709

Live Operation Proxy

Video Quality Middle

NDI Discovery Server

IP Address 172.31.29.251

SRT/RTMP Port Number

Port Number Range 40001 - 41000

M2L-X Control Access

User Name M2L-X\_ABC

Password \*\*\*\*\*

Apply Cancel

Apply Cancel

### System settings

- **[Resolution]:** Displays the resolution. Cannot be modified.
- **[Frame Rate]:** Selects 59.94 or 50 fps frame frequency.
- **[SDR/HDR]:** Selects SDR/8bit/BT.709 or HDR(HLG)/10bit/BT.2020 dynamic range and color gamut.
- **[Live Operation Proxy]:** Adjusts the quality of the video displayed on the [Live Operation] screen. Increasing the setting improves the video quality and also raises the required bit rate. However, if increased too high, the video may stop intermittently depending on the bandwidth of your network connection. Select [High], [Middle], or [Low] according to the state of your network connection.

#### Note

- Modifying the setting when the event status is "Running" will display a confirmation message and cause the event to stop automatically.

- **[NDI Discovery Server]:** Sets the IP address of the NDI discovery server.

- **[SRT/RTMP Port Number]**: Selects the port number range used for output.

### **[M2L-X Control Access] settings**

Configures settings for access to this system from a web browser. Also used for connection with a Stream Deck XL.

- **[User Name]**: Sets the user name of up to 32 characters.
- **[Password]**: Sets the password of 8 to 32 characters.

#### **Note**

- Should only be modified by a system administrator. Modifying settings may disable access to this system from your web browser.
- If using a Stream Deck XL, ask your system administrator to configure the same value on the Stream Deck XL.
- Operation with Stream Deck XL Ver. 2.01.002 and Stream Deck (Application) 6.5.2 has been verified.

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M2L-X

## Configuring a Router Input

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### Configuration method

Select a row in the [Router Input] tab on the [System Settings] screen and configure each item in the [Streaming Settings] pane. When finished configuring items, press the [Apply] button to apply the settings.

### Setup items

Set [Streaming Type] to the appropriate setting for the input source device. The setup items and the available selection options will vary depending on the [Streaming Type] setting.

#### Note

- Modifying the following items when an event is running will display a confirmation message and cause the event to stop.
  - [Display Name]
  - [Video Format]

### When using [SRT]

#### Note


- This system supports SRT input with AES 256 encryption enabled and operating in Listener mode only. To use SRT input, set the SRT setting of the input source to Caller mode.



Use this option when the video input source is SRT.



### Streaming Settings

Display Name	Input 8
Streaming Type	SRT-Listener
Video Format	H.265/HEVC/1920x1080/59.94p
Video Bitrate (kbps)	15000
Buffer (msec)	1000
Audio Codec	AAC
Audio Freq. (Hz)	48000

### Connection Information

Address/Host  
 

Stream Key  
  

- **[Display Name]:** Enter an arbitrary name.
- **[Streaming Type]:** Select [SRT-Listener].
- **[Video Format]:** Select the video format from the list. The selection options will vary depending on the [System] tab setting.
- **[Video Bitrate (kbps)]:** Set the video bit rate in the range 3000 to 25000.
- **[Buffer (msec)]:** Set the buffer size in the range 0 to 10000.
- **[Audio Codec]:** Displays the audio codec. Cannot be modified.
- **[Audio Freq. (Hz)]:** Displays the audio frequency. Cannot be modified.
- **[Connection Information]**
  - **[Address/Host]:** Displays the address and host. Cannot be modified. Set the same value for the input source.
  - **[Stream Key]:** Set a stream key of 10 or more characters. Press  (Shown)/ (Hidden) to show/hide the setting.  
Set the same value for the input source.

### When using [RTMP] or [RTMPS]

#### Note

- This system supports RTMP/RTMPS input in Push mode only. To use RTMP/RTMPS input, set the RTMP/RTMPS setting of the input source to Push mode.

Use this option when the video input source is RTMP/RTMPS.

**Streaming Settings**

Display Name: Input 7

Streaming Type: RTMP-Push

Video Format: H.264/AVC/1920x1080/59.94p

Video Bitrate (kbps): 15000

Audio Codec: AAC

Audio Freq. (Hz): 48000

**Connection Information**

Address/Host: [Redacted]

Stream Key: [Redacted]

Apply Cancel

- **[Display Name]:** Enter an arbitrary name.
- **[Streaming Type]:** Select [RTMP-Push] or [RTMPS-Push].
- **[Video Format]:** Select the video format from the list.
- **[Video Bitrate (kbps)]:** Set the video bit rate in the range 3000 to 25000.
- **[Audio Codec]:** Displays the audio codec. Cannot be modified.
- **[Audio Freq. (Hz)]:** Displays the audio frequency. Cannot be modified.
- **[Connection Information]**
  - **[Address/Host]:** Displays the address and host. Cannot be modified. Set the same value for the input source.
  - **[Stream Key]:** Set a stream key of 1 or more characters. Press (Shown)/ (Hidden) to show/hide the setting. Set the same value for the input source.

### To cancel an input source assignment

Select the row for the assignment you want to cancel on the [Router Input] tab of the [System Settings] screen, and delete the [Streaming Type] setting so that it is blank.



## Configuring a Switcher Input

### Configuration method

Select a row on the [Switcher Input] tab of the [System Settings] screen and configure each item in the [Input Settings] pane. When finished configuring items, press the [Apply] button to apply the settings.

### Setup items

**Input Settings**

Port: SWR IN 2

Streaming Source: Router

Source Signal: 2: Input 2

Apply Cancel

- **[Port]:** Displays the port name. Cannot be modified.
- **[Streaming Source]:** Select the input source signal.
  - **[Router Input]:** Select to assign a router input configured on the [Router Input] tab.
  - **[NDI]:** Select if assigning an NDI signal.
  - **[Clip Player]:** Select if assigning a clip player. A clip player can play video files displayed on the [Clip] tab of the [File Manager] screen. Clip players can be assigned to up to four switcher inputs.
- **[Source Signal]:** The selection options will vary depending on the [Streaming Source] setting.
  - **When [Router Input] is selected:** Select the router input that you want to assign from the list. In this system, a single router input stream can be distributed over four streams. Accordingly, a single router input can be assigned to a total of up to four switcher inputs and output destinations.
  - **When [NDI] is selected:** Enter the name of the NDI signal using up to 127 text characters.
  - **When [Clip Player] is selected:** Select one of [Clip Player1] to [Clip Player4] from the list. Clip players for which a different switcher input is already assigned are not displayed in the list.

#### Note

- H.264/AVC codec is supported on up to 16 lines. Normal operation may not occur if there are 17 or more lines.
- NDI is supported on up to 4 lines. Normal operation may not occur if there are 5 or more lines.
- Modifying the following items when an event is running will display a confirmation message and may cause the event to stop.
  - [Streaming Source]
  - [Source Signal]





M2L-X

## Configuring a Streaming Output Destination

### Configuration method

Select a row on the [Output] tab of the [System Settings] screen and configure each item in the [Output Settings] pane. When finished configuring items, press the [Apply] button to apply the settings.

### Setup items

The screenshot shows the 'Output Settings' screen with the following configuration:

Display Name	Output 2
Source Signal	PVW
NDI Output (Simul)	OFF
NDI Source Name	M2L-X PVW
Streaming Type	SRT-Caller
Video Format	H.264/AVC/1920x1080/59.94p
Video Bitrate (kbps)	15000
Buffer (msec)	300
Audio Codec	AAC
Audio Freq. (Hz)	48000

**Connection Information**

Address/Host: [Redacted]

Stream Key: [Redacted]

Buttons: Apply, Cancel

## Note

- SRT output from this system is encrypted using AES 256.
- This system supports SRT output in Caller mode and Listener mode. To use SRT output, configure settings so that SRT mode of the output destination matches this system.
- This system supports RTMP/RTMPS output in Push mode and Pull mode. To use RTMP/RTMPS output, configure settings so that the RTMP/RTMPS mode of the output destination matches this system.
- Depending on the event status, there may be restrictions on modifying the setting of each item.
  - The settings cannot be changed for any item while streaming output is in progress.
  - Modifying the following items when an event is running will display a confirmation message and cause the event to stop.
    - [NDI Output]
    - [NDI Source Name]
    - [Video Format]
    - [Video Bitrate (kbps)]

- **[Display Name]:** Enter an arbitrary name.
- **[Source Signal]:** Select the video to output on output destinations from [PGM]/[PVW]/[CLN]. When using an option license, you can select the video to output on output destinations with [ID] of “4” to “33” from among 48 router inputs configured on the [Router Input] tab.

## Note



- A router input stream can be replicated on up to four streams for output. Accordingly, you can configure up to four switcher inputs and switcher outputs as output destinations.

- **[Start/Stop All] (output destinations with [ID] of “4” to “33” only):** Select whether to start/stop all streaming output at the same time using the [Start All] button/[Stop All] button.
- **[NDI Output] (output destinations with [ID] of “1” to “3” only):** Select whether to enable simultaneous output of video to NDI. During simultaneous output, output “1” is [PGM], “2” is [PVW], and “3” is [CLN]. These cannot be modified.
- **[NDI Source Name] (output destinations with [ID] of “1” to “3” only):** Set the NDI source name of the video to output. Set different names for “1” to “3.”
- **[Streaming Type]:** Select a protocol supported by the output destination.
- **[Video Format]:** Select the video format from the list for output destinations with [ID] of “1” to “3”. The selection options will vary depending on the [System] tab setting.  
For output destinations with [ID] of “4” to “33”, the format of the input video selected using [Source Signal] is applied. Cannot be modified.
- **[Video Bitrate (kbps)]:** Set the video bit rate in the range 3000 to 25000 for output destinations with [ID] of “1” to “3”. For output destinations with [ID] of “4” to “33”, the bit rate of the input video selected using [Source Signal] is applied. Cannot be modified.
- **[Buffer (msec)]:** Set the buffer size in the range 0 to 10000. Displayed only when [Streaming Type] is [SRT-Caller] or [SRT-Listener].

## Note

- For SRT, buffering is referred to as latency. Setting the latency to 0 msec is not recommended. Set a value according to the SRT standard.  
For details, refer to the official SRT documentation.

- **[Audio Codec]:** Displays the audio codec. Cannot be modified.
- **[Audio Freq. (Hz)]:** Displays the audio frequency. Cannot be modified.
- **[Connection Information]**
  - **[Address/Host]:** Set the address/host of the streaming output destination device or service when [Streaming Type] is set to [SRT-Caller]/[RTMP-Push]/[RTMPS-Push]. The name of the setup item may vary depending on the output destination. Check the specifications for the output destination beforehand.  
When [Streaming Type] is set to [SRT-Listener]/[RTMP-Pull]/[RTMPS-Pull], this displays the address and host. Cannot be modified. Set the same value for the output destination.

- **[Stream Key]:** Set a stream key of 1 or more characters (or 10 or more characters when [Streaming Type] is set to [SRT-Caller] or [SRT-Listener]). Press  (Shown)/ (Hidden) to show/hide the setting.  
Set the same value for the output destination.

### **To cancel an output destination assignment**

Select the row for the assignment you want to cancel on the [Output] tab of the [System Settings] screen, and delete the [Source Signal] setting so that it is blank.

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## Configuring Microphone Audio Input for Audio Commentary

### Configuration method

Select a row on the [MIC Input] tab of the [System Settings] screen and configure each item in the input/output settings pane. When finished configuring items, press the [Apply] button to apply the settings.

### Setup items

**Mic Input Settings**

Display Name	Audio Comentary
Streaming Type	SRT
Buffer (msec)	1000
Audio Codec	AAC
Audio Freq. (Hz)	48000

**Connection Information**

Address/Host  
 ..... [Copy]

Stream Key  
 ..... [Eye Icon] [Copy]

[Apply] [Cancel]

- **[Display Name]**: Enter an arbitrary name. It will be displayed on the [Live Operation] screen.
- **[Streaming Type]**: Displays [SRT]. Cannot be modified.
- **[Buffer (msec)]**: Set the buffer size in the range 200 to 1000.
- **[Audio Codec]**: Displays the audio codec. Cannot be modified.
- **[Audio Freq. (Hz)]**: Displays the audio frequency. Cannot be modified.
- **[Connection Information]**
  - **[Address/Host]**: Displays the address and host. Cannot be modified. Set the same value for the input source.
  - **[Stream Key]**: Set a stream key of 10 or more characters. Press (Shown)/ (Hidden) to show/hide the setting.  
Set the same value for the input source.

### To cancel an input source assignment

Select the row for the assignment you want to cancel on the [MIC Input] tab of the [System Settings] screen, and delete the [Streaming Type] setting so that it is blank.

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### Related Topic

- [Audio Commentary Function](#)

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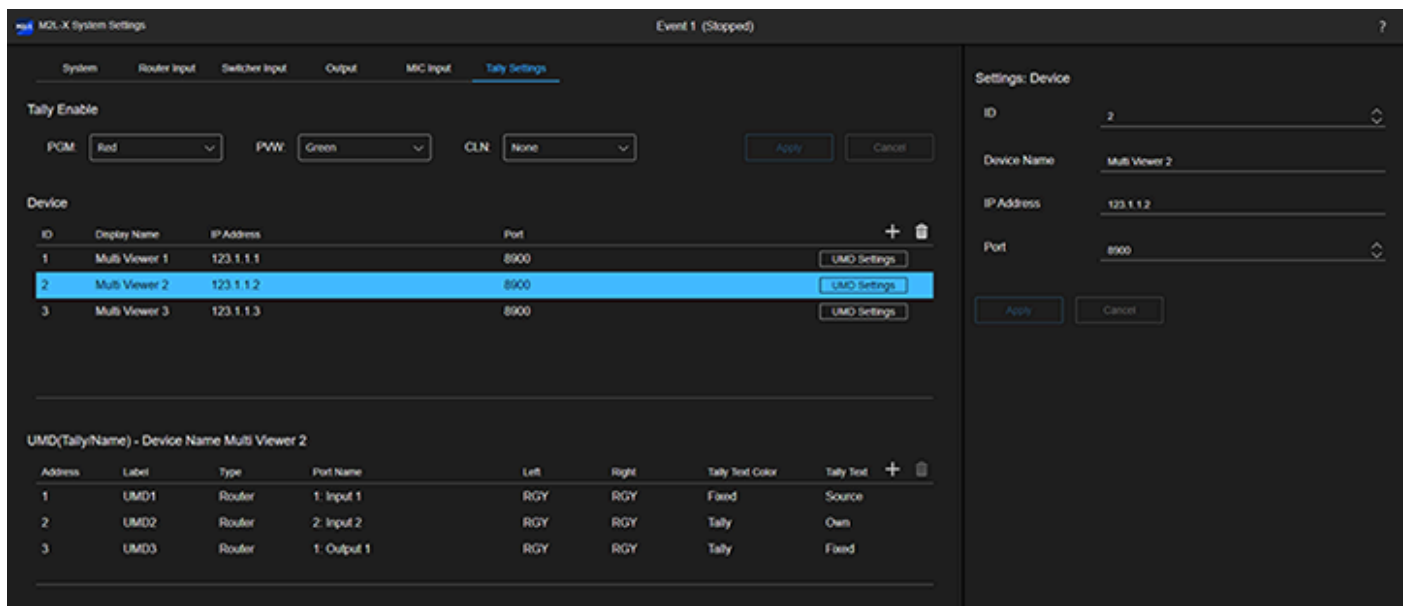
M2L-X

## Configuring Tally (option license is required)

### Configuration method

Configure each item on the [Tally Settings] tab of the [System Settings] screen. When finished configuring items, press the [Apply] button to apply the settings. The setup items and the available selection options in the [Settings] pane will vary depending on the row selected in the [Device] list or [UMD (Tally/Name)] list.

### Setup items



Setup items on the [Tally Settings] tab are subdivided into the [Tally Enable] pane and [Settings] pane, each having an [Apply] button.

### [Tally Enable] pane

Select the tally color for each output for the [PGM]/[PWV]/[CLN] tally trigger. When [None] is selected, a tally signal is not generated.

### [Settings] pane

Configure the tally display device settings or the UMD settings used by each tally display device.

When you press **+** (Add) or select a row in the [Device] list, the setup items for the tally display device are displayed in the [Settings] pane.

When you press [UMD Settings] in the [Device] list, the UMD linked to the tally display device is selected in the [UMD (Tally/Name)] list and the UMD setup items are displayed in the [Settings] pane. If you want to link to a different UMD, select the row for the UMD you want to link with or press **+** (Add) in the [UMD (Tally/Name)] list.

### When configuring a tally display device

- **[ID]**: Enter an arbitrary ID.
- **[Device Name]**: Enter an arbitrary name.
- **[IP Address]**: Enter the IP address of the tally display device.
- **[Port]**: Enter the port number used for TSL UMD protocol communication.

### When configuring a UMD

- **[UMD Address]:** Enter the UMD address.
- **[Label]:** Enter an arbitrary UMD name.
- **[Type]:** Select a service to display on the UMD.
- **[Port Name]:** Select the connector for which tally is displayed.
- **[Tally Indicator]:** Place a check mark in the color to display for each UMD tally ([Left] and [Right]). If check marks are placed for multiple colors, the display is sorted in order [Red] > [Green] > [Yellow].
- **[Tally Text Color]:** Select the color to display for UMD text (Center).  
When [Tally] is selected, the tally is only displayed if the color selected using [Color] matches the tally color.  
When [Fixed Color] is selected, the tally is always displayed in the color selected using [Color].
- **[Tally Text]:** Select the type of text to display on the UMD.
  - [Fixed]: Displays the text entered in [Fixed Tally Text].
  - [Source]: The displayed content will vary depending on the [Type] and [Port Name] settings.  
When [Type] is set to [Router] and [Port Name] is set to [IN], the [Display Name] setting of the router input is displayed.  
When [Type] is set to [Router] and [Port Name] is set to [OUT], the [Display Name] setting of the router input connected to the output destination is displayed.  
When [Type] is set to [Switcher], text is not displayed.
  - [OWN]: The displayed content will vary depending on the [Type] and [Port Name] settings.  
When [Type] is set to [Router] and [Port Name] is set to [IN], the [Display Name] setting of the router input is displayed.  
When [Type] is set to [Router] and [Port Name] is set to [OUT], the [Display Name] setting of the output destination is displayed.  
When [Type] is set to [Switcher], text is not displayed.

#### Note

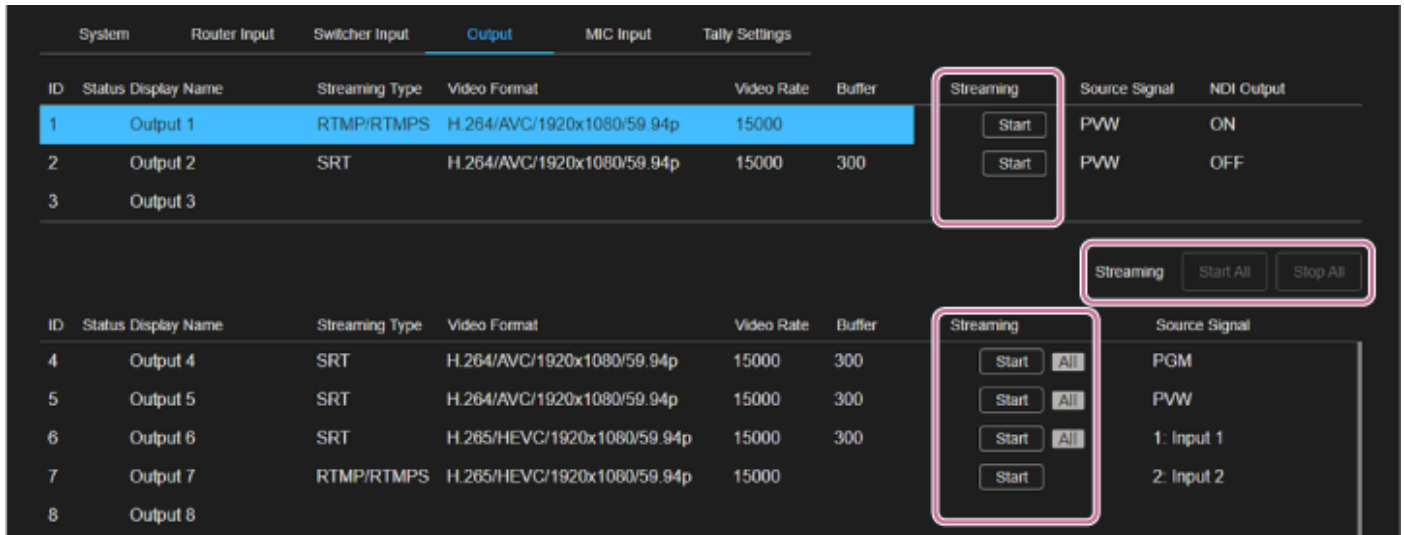
- A tally is sent using the TSL UMD V5.0 protocol.
- The character encoding for text sent by a tally is UTF-16LE.
- If [Tally Text] is set to [Source], [Port Name] is set to [OUT], and the output is [PGM]/[PVW]/[CLN], tally text will not be sent.

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## Starting/Stopping Streaming


### Note



- Streaming output is supported only when an event is in the “Running” state.



For streaming output, an output destination must be configured on the [Output] tab of the [System Settings] screen beforehand.

Press the [Start] button in the [Streaming] column on the [Output] tab of the [System Settings] screen. Preparation for streaming output begins and  (Starting) is displayed on the left side of the button.

When streaming output starts,  (Streaming output) is displayed on the left side of the button and the [Start] button changes to the [Stop] button.

When you press the [Stop] button,  (Stopping) is displayed on the left side of the button and preparation for stopping streaming output begins. When stopped,  (Stopping) disappears and the [Stop] button changes to the [Start] button. You can also start/stop streaming output for all output destinations with [ID] of “4” to “33” for which [Start/Stop All] is enabled, at the same time, using the [Start All] button/[Stop All] button.

### Note

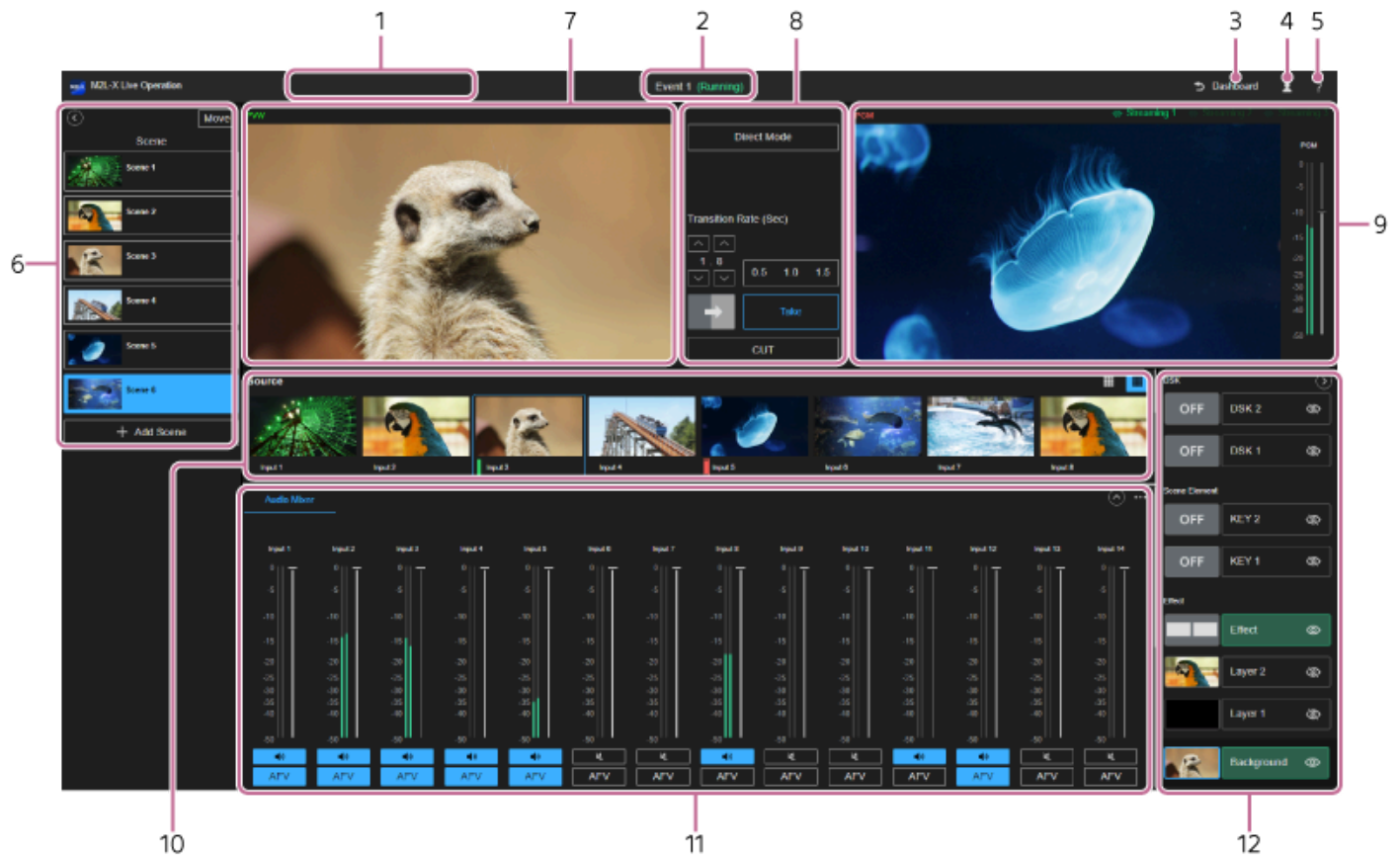
- A short delay may occur after pressing each button until streaming output actually starts/stops.
- When [NDI Output] is set to [ON] on the [Output] tab of the [System Settings] screen, NDI output from destinations with [ID] of “1” to “3” always occurs regardless of the streaming output status.





### Related Topic

- [Starting an Event and Starting Live Operation](#)
- [Configuring a Streaming Output Destination](#)



## Structure of the [Live Operation] Screen

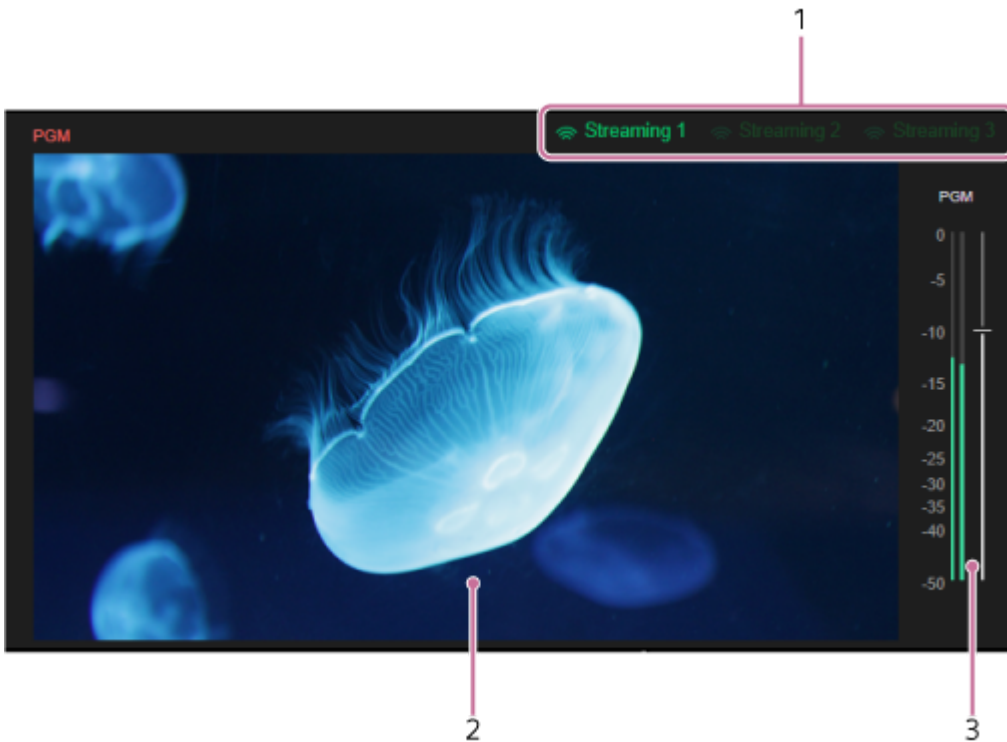


1. **License validity period display:** Displays  (caution) when the remaining validity period license is less than 14 days.
2. **Event name/status display:** Displays the name/status of the event for which the [Live Operation] screen was opened.
3. **[Dashboard] button:** Use to return to the [Dashboard] screen after finishing live operation.
4. ** (Account):** Press the icon to display a drop-down list.
  - [License]: Select to display the license registration screen.
  - [Update]: Select to display the software update screen.
  - [Version]: Select to display the version information of this system.
  - [Sign Out]: Select to sign out from this system.
5. ** (Help Guide):** Select to display this Help Guide.
6. **[Scene] pane:** Displays a list of registered scenes. Press  (Close) to close the [Scene] pane. To open the [Scene] pane, press the [Scene] bar on the left edge of the screen.

### Hint

- The [Scene] pane open/close status is stored for each user. This does not affect other users using the same event.

7. **[PVW] pane:** Displays the preview output video (the video that will be the next program output). Also used to check the image assigned to KEY, and the size and position of a PinP subscreen, among other things.
8. **Transition control pane:** Displays buttons and settings for configuring and performing transitions.
9. **[PGM] pane:** Displays the program output video and the status of the audio and output. When [Direct Mode] is enabled, a red frame is displayed around the video area.



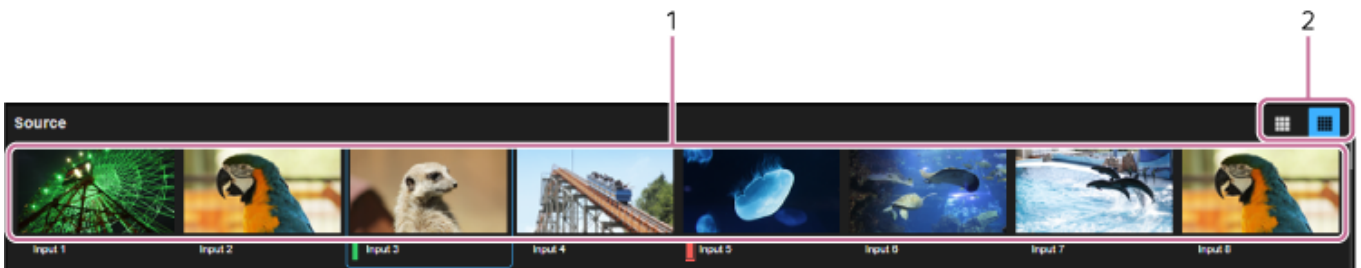
1. **[Streaming 1]/[Streaming 2]/[Streaming 3] status indicator:** Displays the streaming output status.

- **Streaming 1** (Streaming output): Displayed when streaming output is in progress.
- **Streaming 1** (Stopped): Displayed when streaming output is not in progress.

2. **Video display pane:** Displays the program output video.

3. **Audio adjustment pane:** Use to adjust the volume and monitor the audio level of the program output.

10. **[Source] pane:**



1. **Thumbnail view:** Displays the name and video of the switcher input configured on the [Switcher Input] tab of the [System Settings] screen. You can assign an uploaded video file to [Player 1] to [Player 4].

A blue frame is displayed around the selected video.

A tally is lit for the current program output and current preview output video.

The tally is lit red during program output and lit green during preview output.

2. **[Large]/[Small]** : Changes the display size of the thumbnails.

#### Hint


- The sizes of thumbnails and the size of the display area in the [Source] pane are stored for each user. This does not affect other users using the same event.

#### Note

- If there is a problem with the input video, such as image freezing, you can check whether an error has occurred using [Status] on the [System Settings] screen.

11. **Edit/Control pane:** Displays the setup items for assigning content and editing settings. The display content will vary depending on the selection status of the [Source] pane and [Layer] pane.

12. **[Layer] pane:** Displays the layers of each content composited in the video.




Press  (Close) to close the [Layer] pane. To open the [Layer] pane, press the [Layer] bar on the right edge of the screen.

#### Hint

- The [Layer] pane open/close status is stored for each user. This does not affect other users using the same event.

You can press the thumbnail area of a layer to assign content and edit settings. You can also press the name of a layer to switch the output status.

The background color and icon vary depending on the output status.

- Gray: The layer is not being output anywhere.  (No output) is displayed to indicate that the layer is not being output.
- Red: The layer is active and is being used in the program output video.  (Output) is displayed to indicate that the layer is being output.
- Green: The layer is active and is being used in the preview output video.  (Output) is displayed to indicate that the layer is being output.

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#### Related Topic

- [Starting an Event and Starting Live Operation](#)

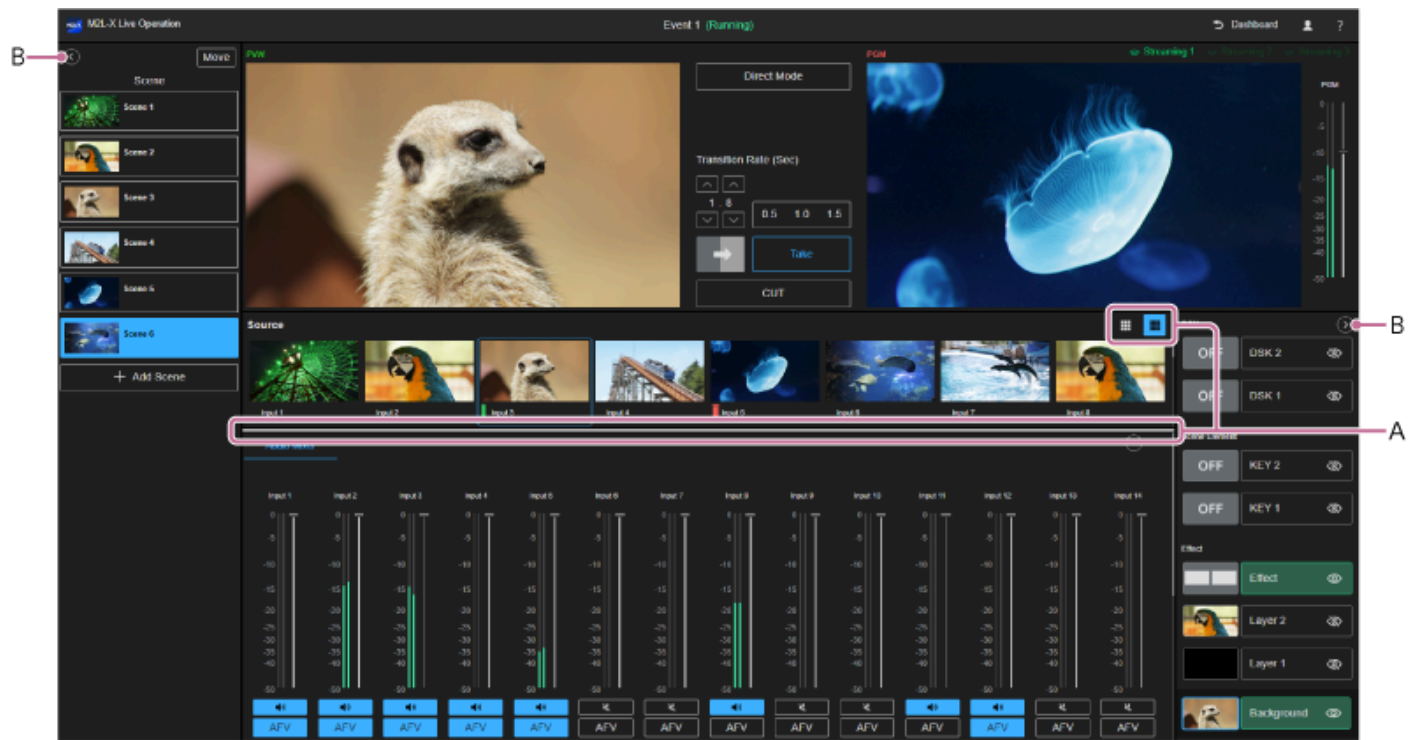
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## Tailoring Operations According to Desired Task

On the [Live Operation] screen, the size of the display area of each pane can be changed and functions can be switched for each user. This allows each operator to tailor the operating environment to suit their tasks.

### Hint

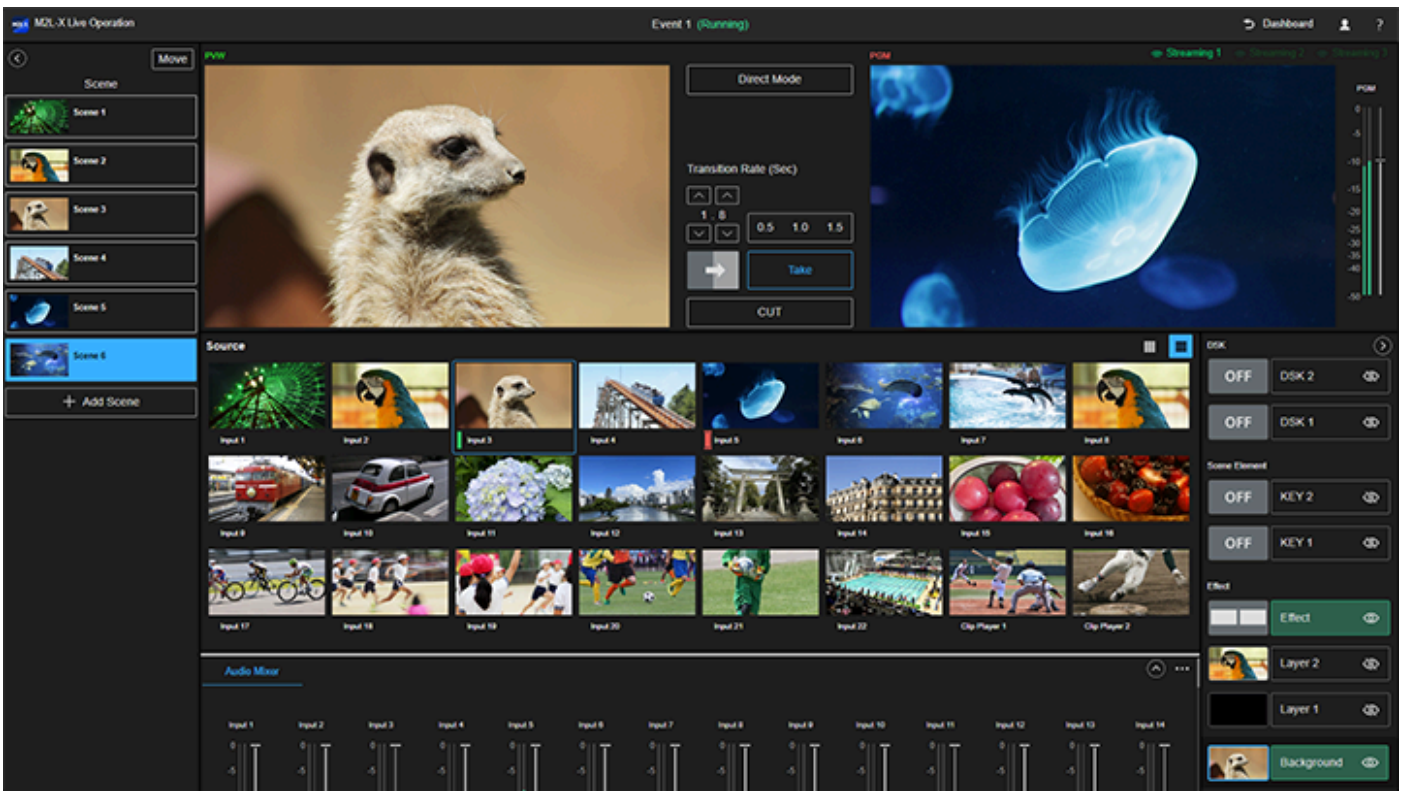
- These preferences are stored for each user. This does not affect other users using the same event.



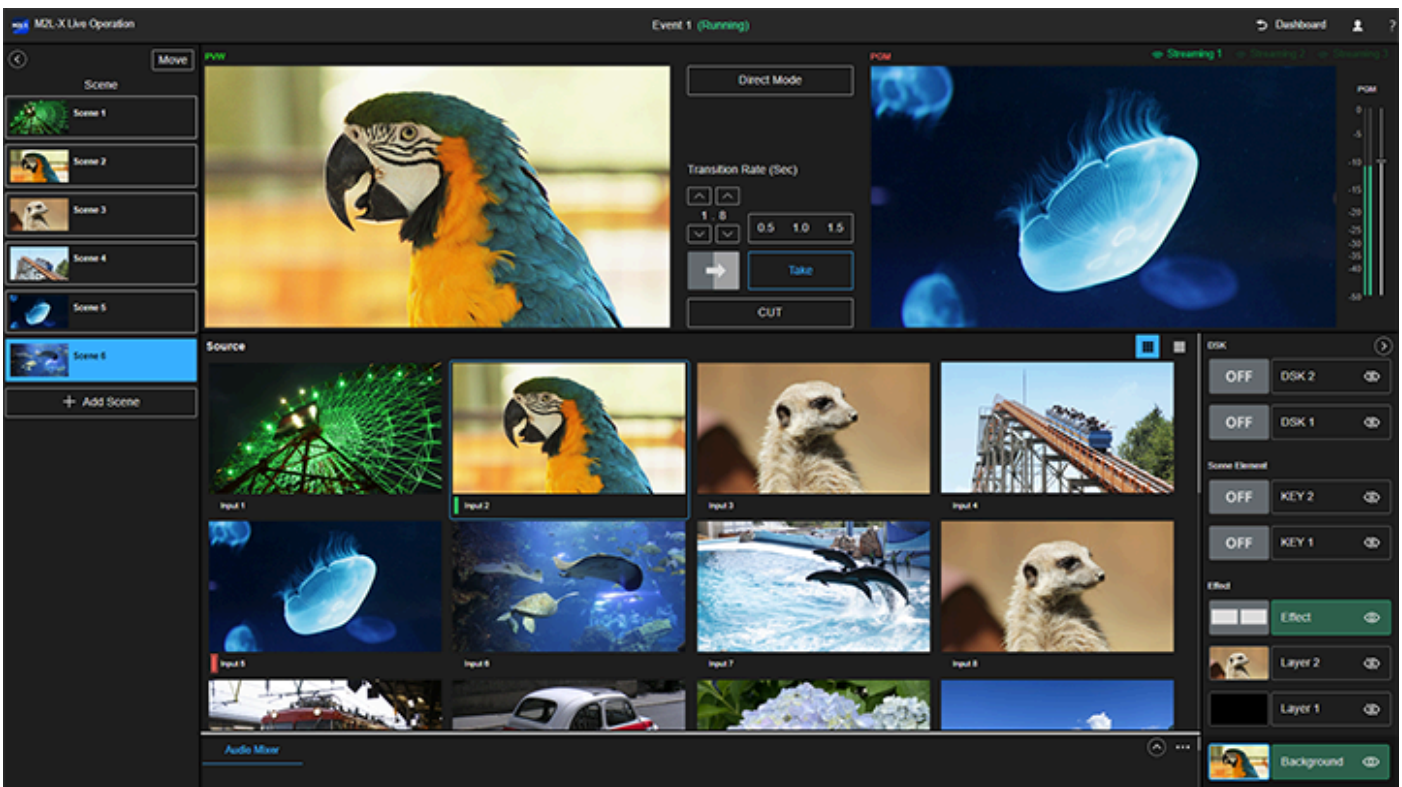
### A: To change the size of the display area of the [Source] pane

You can change the size of the display area of the [Source] pane by dragging the border lines up/down in the [Source] pane and Edit/Control pane.



**When only the size of the display area on the [Source] pane is increased**





When the thumbnail display size on the [Source] pane is also increased



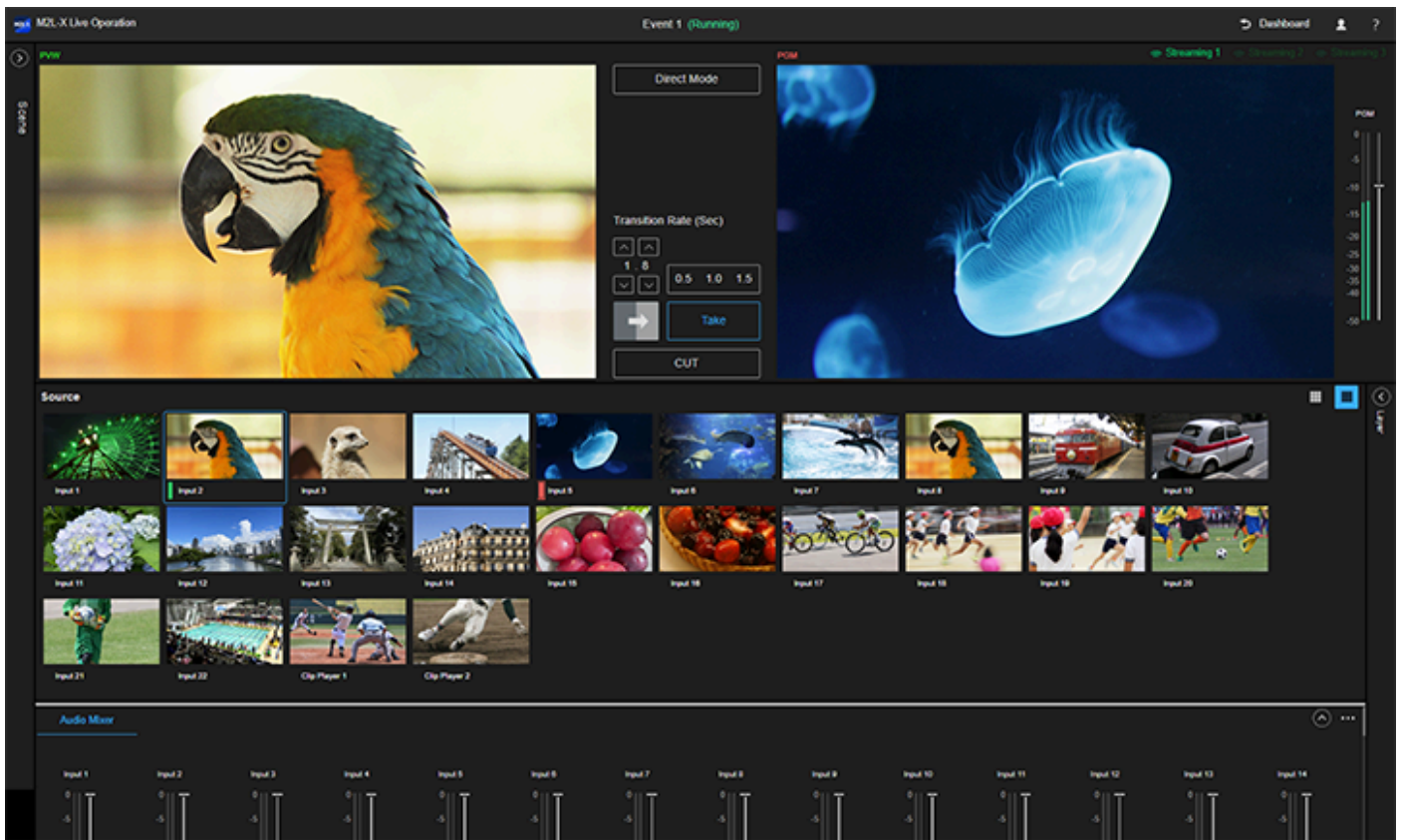
### Hint

- To change the thumbnail display size on the [Source] pane, use  (Large) /  (Small).

### B: To hide the [Scene] pane and [Layer] pane

Press  (Close) in the [Scene] pane or  (Close) in the [Layer] pane to hide the pane in the bar along the edge of the screen. This allows you to increase the width of the monitor area, the [Source] pane, and Edit/Control pane.





## Related Topic

- [Structure of the \[Live Operation\] Screen](#)

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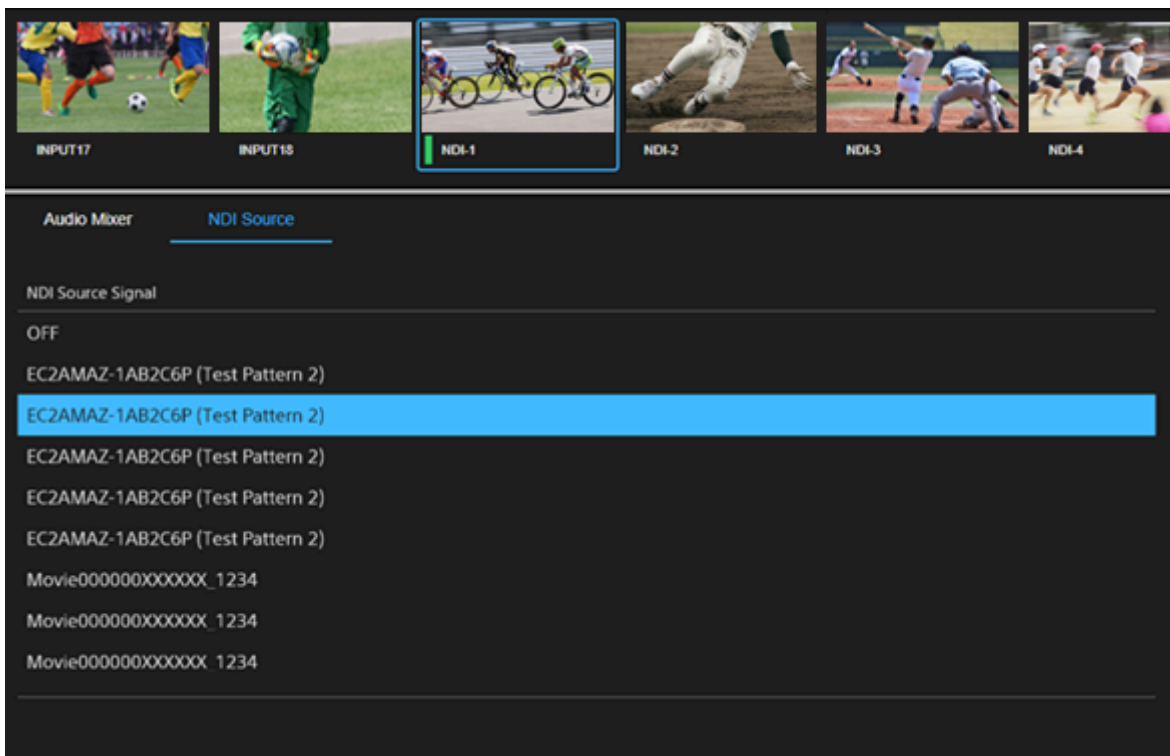
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## Switching NDI Inputs on the [Live Operation] Screen

You can switch to a different NDI signal on the [Live Operation] screen for switcher inputs to which NDI signals are assigned.

### Note

- The NDI signal that you switch to on the [Live Operation] screen is not stored. When you stop an event, the NDI signal configured on the [Switcher Input] tab of the [System Settings] screen is restored. To continue using the different NDI signal, change the assignment on the [Switcher Input] tab of the [System Settings] screen.



When you select the thumbnail for a switcher input to which NDI signals are assigned in the [Source] pane, the [NDI Source] tab appears in the Edit/Control pane.

Selecting the NDI signal you want to use from the list of NDI signals displayed on the [NDI Source] tab switches the NDI signal assigned to the switcher input.

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## Transitions

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### Description

A transition is a change in the program output video to a different video.

When you execute a transition, the video in the [PGM] pane is switched to the same video in the [PVW] pane using the selected transition effect.

#### Hint

- A DSK is used for direct transitions in the program output. When a transition is executed, the video is switched using a cut without selecting an effect.

### Transition methods

The following methods for executing a transition are supported.

- Switching using cut effect ([CUT] button)  
Press the [CUT] button to execute a transition using the cut effect.
- Switching using configured effect ([Take] button)  
Press the [Take] button to execute a transition using a preconfigured effect. You can also configure the switching duration beforehand.
- Switching the program output directly ([Direct Mode] button)  
When [Direct Mode] is enabled, the program output is switched directly when a layer is shown/hidden or when the video source is changed. Use when you want to switch the program output video instantaneously without checking the preview output video.

#### Hint

- If you want to check the preview output video before executing a transition, disable [Direct Mode] and execute a transition using the [CUT] button or [Take] button.

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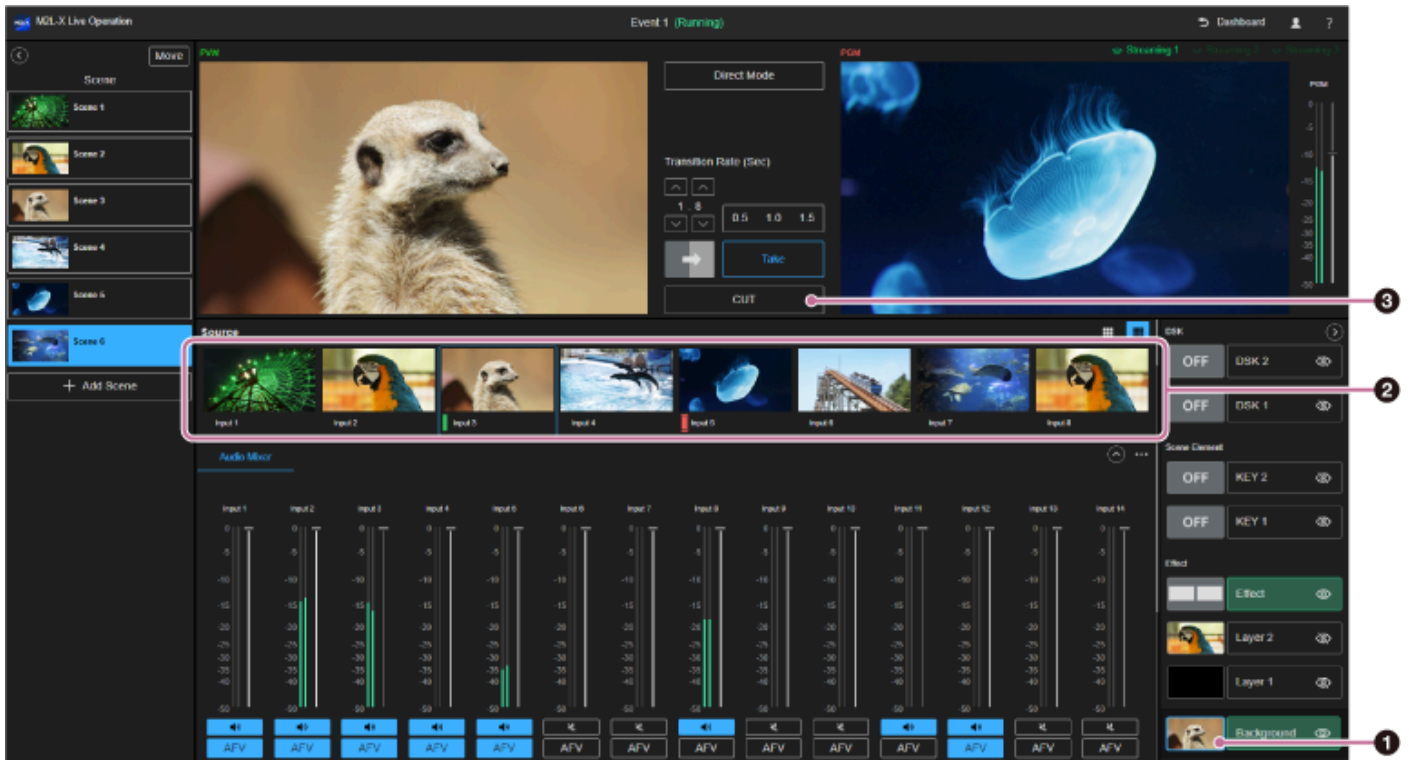
### Related Topic

- [Switching Using the Cut Effect](#)
- [Switching Using a Configured Effect](#)
- [Switching the Program Output Directly](#)

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## Switching Using the Cut Effect



### Hint

- This topic describes a background video only transition as an example. If you want to include other layers in a transition, change the settings and show/hide status of each layer and then execute a transition.

**1 Select the thumbnail for the [Background] layer in the [Layer] pane.**

The [Background] layer is selected.

**2 Press the thumbnail for the video source you want to set for preview output in the [Source] pane.**

The selected video source is displayed as the background video in the [PVW] pane.

**3 Select the [CUT] button in the transition control pane at the instant you want to execute a transition.**

A transition is executed using the cut effect and the video in the [PGM] pane is switched to the same video in the [PVW] pane.

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## Switching Using a Configured Effect



### Hint

- This topic describes a background video only transition as an example. If you want to include other layers in a transition, change the settings and show/hide status of each layer and then execute a transition.

#### 1 Set the duration time required for the transition in the transition control pane.

Press the up/down arrow buttons to change the value or press the [0.5], [1.0], or [1.5] button to set the value (Unit: seconds).

You can set a value in the range 0.1 to 4.9.

#### 2 Set the transition effect.

1. Select the thumbnail for a transition pattern in the transition control pane.  
The [Transition] tab is displayed in the Edit/Control pane, and displays a list of transition effects.
2. Press the button for the transition effect you want to set.  
The configured transition effect is displayed on the transition pattern thumbnail.

#### 3 Set the animation to be composited during the transition.

1. To composite an animation during a transition, turn on [With Clip] at the bottom of the [Transition] tab.  
A list of animations for use in transitions that have been uploaded to this system is displayed.

2. Press the thumbnail for the animation you want to composite in a transition.
3. Select the timing for compositing the animation for the transition using [Alignment].
  - [Match]: The transition occurs with a duration that matches the length of the animation for the transition. The time required for a transition that was set in step 1 is not applied.
  - [Center]: The transmission animation is played with timing such that the midpoint of the animation coincides with the midpoint of the time required for the transition that was set in step 1.
  - [Manual]: The animation for the translation is played with timing that matches the specified [Offset] value. You can set a value for [Offset] in the range “-5.0” to “5.0” (seconds). If you set a negative value for [Offset], the animation for the transition will start playing before the start of the transition by the set value. If you set a positive value, the transition animation will start playing after the start of the transition by the set value.The configured transition effect and the animation for the transition are displayed on the transition pattern thumbnail.

**4 Make adjustments to the animation images as required.**

For details about adjustment, see “Adjusting Composited Content.”

**5 Select the thumbnail for the [Background] layer in the [Layer] pane.**

The [Background] layer is selected.

**6 Select the thumbnail for the video source you want to set for preview output in the [Source] pane.**

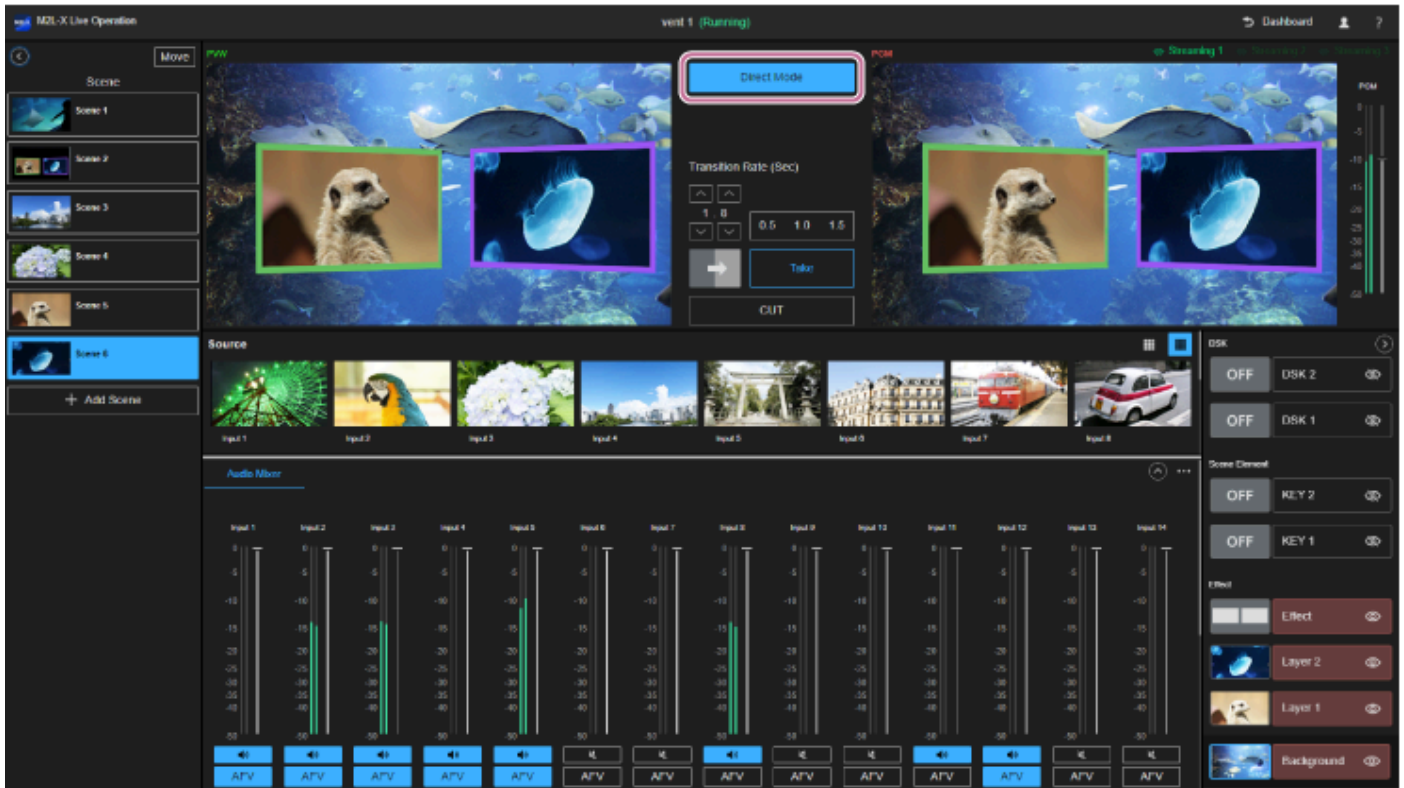
The selected video source is displayed as the background video in the [PVW] pane.

**7 Press the [Take] button in the transition control pane at the instant you want to execute a transition.**

A transition is executed using the configured effect/duration and the video in the [PGM] pane is switched to the same video in the [PVW] pane.

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## Switching the Program Output Directly



When [Direct Mode] is enabled, the program output is switched directly using the cut effect when a layer is shown/hidden or when the video source is changed. Use when you want to switch the program output video instantaneously without checking the preview output video.

### Note

- To use content being played in a clip player, for example, it is recommended that you disable [Direct Mode] and check the content in the [PVW] pane before displaying it in the [PGM] pane.
- When the following operations are executed, the program output video will not be switched. Only the preview output is switched. Check the preview output video settings, then execute a transition using the [CUT] button or [Take] button.
  - When an image/video clip file to be composited is changed (including disabling) in the Edit/Control pane
  - When a scene is recalled in the [Scene] pane

### To enable/disable [Direct Mode]

To enable/disable [Direct mode], press the [Direct Mode] button in the transition control pane. When [Direct Mode] is enabled, the [Direct Mode] button lights up and a red frame is displayed around the video in the [PGM] pane.

## Switching the Program Output Subscreen Video Directly



To switch only the program output subscreen video directly, [Direct Mode] must be enabled.

Press the thumbnail for one of the layers ([Layer 1] to [Layer 4]) in the [Layer] pane to select it. Select the thumbnail for the video source to display in the subscreen from the [Source] pane. The program output subscreen video switches using the cut effect.

### Related Topic

- [Switching the Program Output Directly](#)
- [Setting PinP](#)

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M2L-X

## Compositing

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Up to six separate elements containing videos and images can be superimposed and composited against the background video. Use a different layer for each element according to the application and type of content. Images for use on a DSK/KEY must be uploaded to this system beforehand. You can also use input from an external graphics system on a DSK.

### Types of compositing

DSK (Downstream Key), KEY, and Effect with different functions and uses are used for compositing.

#### DSK

A DSK composites an image directly on the upper-most layer of the program output video. You can configure a total of two images, one each for the [DSK 1] and [DSK 2] layers. Compositing input from an external graphics system is also supported.

In the [Layer] pane, you can switch the show/hide state for the program output (transition effects cannot be applied).

#### KEY

A KEY is used when you want to manually show/hide a composited image against a video. You can configure a total of four images, one each for the [KEY 1] to [KEY 4] layers.

#### Hint

- A total of up to four KEY/PinP elements can be composited. Depending on the number of subscreens set on the [Effect] layer, the [KEY 1] to [KEY 4] layers will be displayed/hidden and the number of keys that can be composited will increase or decrease in the range 0 to 4.

#### Effect

An effect is a function for compositing another video on the background video according to a preset provided by this system. 1-box type to 4-box type PinP (Picture in Picture) presets are provided.

Select a preset on the [Effect] layer and set the video in the displayed [Layer 1] to [Layer 4] layers (up to four KEY and PinP elements can be composited.).

- PinP  
This function composites a separate video as a subscreen against the background video. You can configure a total of four images, one each for the [Layer 1] to [Layer 4] layers.

### Display priority

When multiple elements are composited for the background video, they are displayed in the following order from the front to the back. Layers of the same type are displayed in decreasing numeric order from the front.

1. [DSK 2]/[DSK 1] layer
2. [KEY 4] to [KEY 1] layers
3. [Layer 4] to [Layer 1] layers (PinP subscreens)

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#### Related Topic

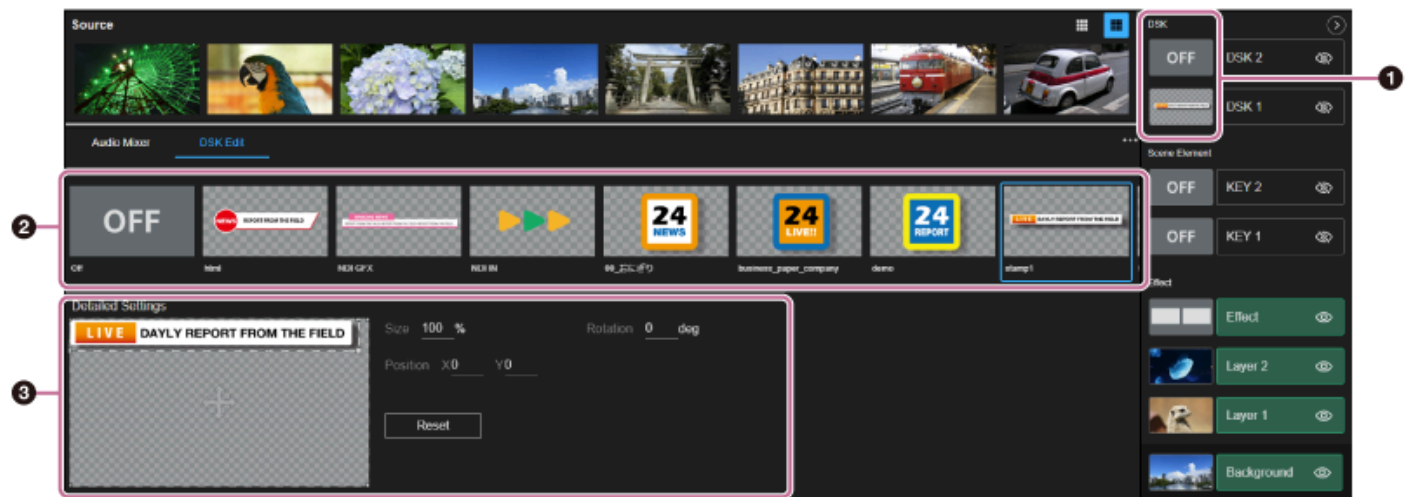
- [Setting a DSK](#)
- [Setting a KEY](#)



## Setting a DSK

A DSK composites an image directly on the upper-most layer of the program output video. You can configure a total of two images, one each for the [DSK 1] and [DSK 2] layers. Compositing input from an external graphics system is also supported.

In the [Layer] pane, you can switch the show/hide state for the program output (transition effects cannot be applied). To set an image in a DSK, the image must be uploaded to this system using the [File Manager] screen or an external graphics system must be configured beforehand.



- 1 Select the thumbnail for the [DSK 1] or [DSK 2] layer in the [Layer] pane.

The [DSK] tab and its setup items are displayed in the Edit/Control pane.

- 2 Select the image to set in the DSK from the images uploaded to this system or the input from an external graphics system.

When an external graphics system is configured, [HTML5 Input] is displayed as the name.

If the layer selected in step 1 is being displayed in the output video, the image composited against the background video is displayed in both the [PVW] pane and [PGM] pane.

### Hint

- HTML5 input and NDI input can be used as an external graphics system. To use HTML5 input, configure the HTML5 URL on the [Graphics System] tab of the [File Manager] screen. [HTML5 Input] is displayed in the list of images. To use NDI input, configure NDI as an input signal on the [Switcher Input] tab of the [System Settings] screen. [Display Name], configured for NDI input, is displayed in the list of images.
- When using NDI input as a DSK, tally is not displayed on that NDI input. However, if you assign that NDI input to a UMD on the [Tally Settings] tab of the [System Settings] screen, tally will be sent to the UMD.
- When [OFF] is selected, the image assignment is released. If the layer selected in step 1 is being displayed in the output video, it will be hidden.

- 3 Make adjustments to the DSK image as required.

For details about adjustment, see “Adjusting Composited Content.”

### Hint



- When using [HTML5 Input] as the DSK image, the size and position of the image cannot be adjusted using this system. Adjust the image on the external graphics system side.

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### Related Topic

- [Setting an External Graphics System](#)
- [Adjusting Compositing Content](#)
- [Showing/Hiding Compositing Content](#)

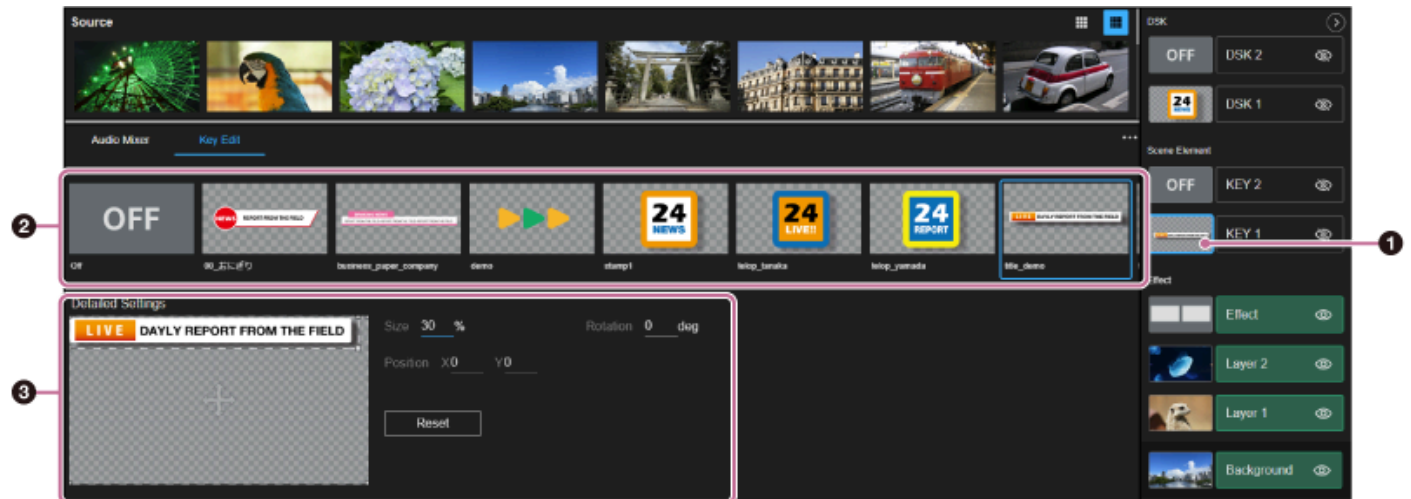
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## Setting a KEY

A KEY is used when you want to manually show/hide a composited image against a video. You can configure a total of four images, one each for the [KEY 1] to [KEY 4] layers.

To set an image in a KEY, the image must be uploaded to this system using the [File Manager] screen beforehand.



- 1 Select a thumbnail from one of [KEY 1] to [KEY 4] layers in the [Layer] pane.

The [KEY] tab and its setup items are displayed in the Edit/Control pane.

- 2 Select the image to be composited from the images uploaded to this system.

If the layer selected in step 1 is displayed in the preview output, the image selected here is composited against the background video and is displayed in the [PVW] pane.

### Hint

- When [OFF] is selected, the image assignment is released. If the layer selected in step 1 is being displayed in the output video, it will be hidden.
- A total of up to four KEY/PinP elements can be composited. Depending on the number of subscreens set on the [Effect] layer, the [KEY 1] to [KEY 4] layers will be displayed/hidden and the number of keys that can be composited will increase or decrease in the range 0 to 4. For example, when [PinP 2] is selected on the [Effect] layer, the [KEY 1] to [KEY 2] layers are displayed allowing two KEY images to be composited.

- 3 Make adjustments to the KEY image as required.

For details about adjustment, see “Adjusting Composited Content.”

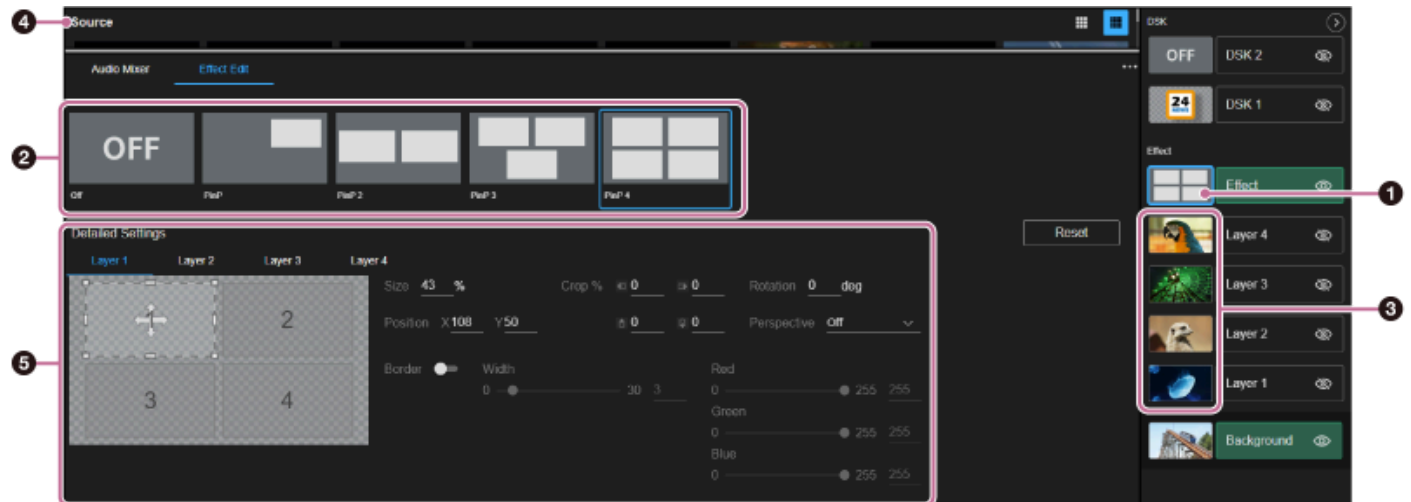
### Related Topic

- [Adjusting Composited Content](#)
- [Showing/Hiding Composited Content](#)



## Setting PinP

PinP is a function for compositing another video as a subscreen on a video. You can composite a total of four images, one each for the [Layer 1] to [Layer 4] layers, on the background video.



**1 Select the thumbnail for the [Effect] layer in the [Layer] pane.**

The [Effect] tab and its setup items are displayed in the Edit/Control pane.

**2 Select one of [PinP]/[PinP 2]/[PinP 3]/[PinP 4] from the list of presets.**

Select a preset with the number of subscreens you want to composite.

The thumbnail on the [Effect] layer in the [Layer] pane changes to an image of the selected preset. The [Layer 1] to [Layer 4] layers appear above the [Effect] layer (the number of layers that are displayed will vary depending on the selected preset).

**Hint**

- When [OFF] is selected in the list of presets, the preset selection is released and the [Layer 1] to [Layer 4] layers are closed in the [Layer] pane. If the [Layer 1] to [Layer 4] layer content is being displayed in the output video, they will be hidden.
- A total of up to four KEY/PinP elements can be composited. Depending on the number of subscreens set here, the [KEY 1] to [KEY 4] layers will be displayed/hidden and the number of keys that can be composited will increase or decrease in the range 0 to 4. For example, when [PinP 2] is selected, the [KEY 1] to [KEY 2] layers are displayed allowing two KEY images to be composited.

**3 Select a thumbnail from one of [Layer 1] to [Layer 4] layers in the [Layer] pane.**

**4 Select the video source to composite as the subscreen in the [Source] pane.**

If the layer selected in step 3 is being displayed in the output video, the selected image is composited against the background video and is displayed in the [PVW] pane.

**5 Make adjustments to the subscreen as required.**

For details about adjustment, see “Adjusting Composited Content.”

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## Related Topic

- [Compositing](#)
- [Adjusting Composited Content](#)

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## Adjusting Composited Content

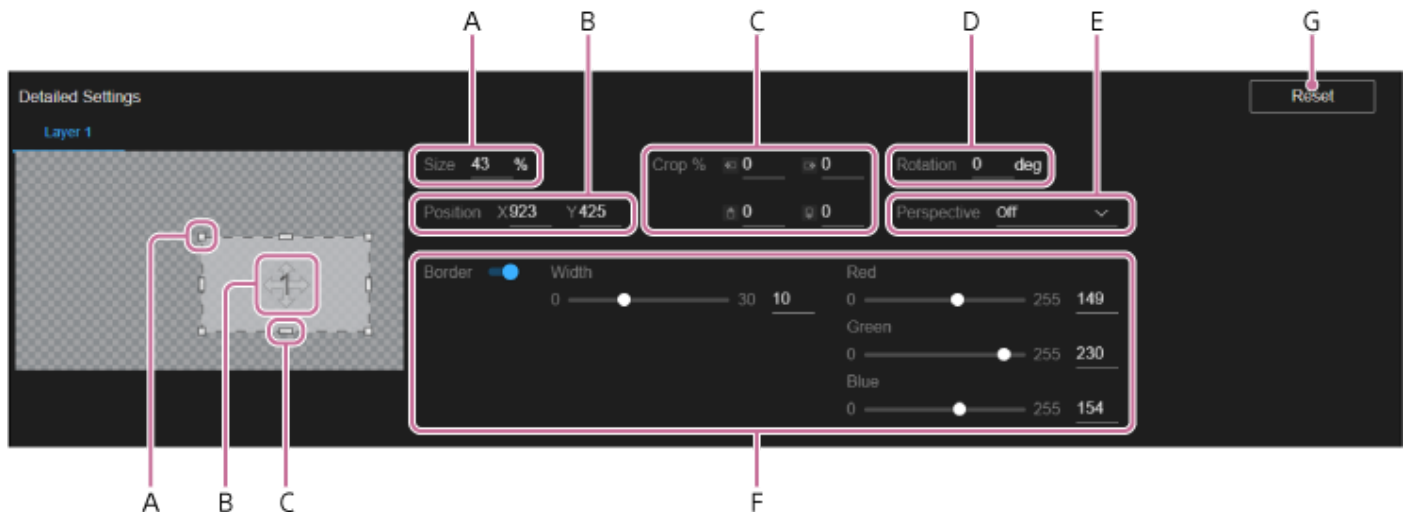
When compositing videos/images, you can adjust the size and position of the composited content, as required. For PinP, you can also adjust the cropping, border, display angle, and perspective. You can make adjustments by dragging the image or specifying numeric values under [Detailed Settings] in the Edit/Control pane.

When a numeric value is specified, press the [Enter] key on the keyboard or move the focus away from the entry field to apply the value. Press the [Esc] key before applying a value to return to the previous entered value.

If a layer for which composited content is set is for preview output, any content adjustments will be reflected in the video in the [PVW] pane in real time.

### Hint

- For a [DSK] layer, adjustments will also be reflected in the video in the [PGM] pane in real time.



### A: Adjusting the size

#### To adjust by dragging composited content

Drag the squares at the four corners of the dotted lines that indicate the composited image to change it to the desired size.

#### To adjust by specifying numeric values

Enter the display magnification in the [Size] field. The valid range of values is 0 to 200 (%) (0 to 100 for PinP).

### B: Adjusting the position

#### To adjust by dragging composited content

Drag inside the dotted lines that indicate the composited image (not the squares at the four corners) to move it to the desired position.

#### To adjust by specifying numeric values

Enter an X coordinate (horizontal position) and Y coordinate (vertical position) in the [Position] fields. The coordinates indicate the position of the top left corner of the composited content. The valid range of values is -1920 to +1920 (px) for the X coordinate and -1080 to +1080 (px) for the Y coordinate.

### C: Adjusting the crop range (PinP only)

## To adjust by dragging composited content

Drag the squares at the center of the four sides of the dotted lines that indicate the composited content to change it to the desired range.

## To adjust by specifying numeric values

Enter the top/bottom/left/right crop range values in the [Crop] entry fields. The valid range of values is 0 to 99 (%).

### D: Adjusting the display angle

To rotate the composited content display, enter an angle in the [Rotation] field. The valid range of values is -180 to 180 (degrees).

### E: Adjusting the perspective (PinP only)

To display the PinP subscreen at an angle with a sense of perspective, select a setting other than [OFF] in the [Perspective] field. Depending on the option, either the left or right side will appear closer and the perspective will differ.

### F: Adjusting the border (PinP only)

To add a border around the PinP subscreen, enable [Border]. You can set the thickness using [Width] and set the color of the border using a combination of [Red], [Green], and [Blue].

## To adjust by dragging the slider bar

Change to the desired numeric value by dragging the slider bars.

## To adjust by specifying numeric values

Enter numeric values in each field. The range of configurable values for [Width] is 0 to 30, and for [Red]/[Green]/[Blue] is 0 to 255.

### G: Resetting

Press the [Reset] button to reset all composited content adjustments to their initial state.

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## Showing/Hiding Composited Content

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Press the name of the layer in the [Layer] pane for which you want to switch the display state (show/hide) of the composited content in the output video. Each time you press the name of the layer, the display state of the layer switches (show/hide).

### Hint

- The [DSK 1]/[DSK 2] layers are composited directly with the program output, so the show/hide state switches simultaneously in both the [PVW] pane and [PGM] pane.
- The [KEY 1] to [KEY 4] layers and [Layer 1] to [Layer 4] layers show/hide state switches only in the [PVW] pane when [Direct Mode] is disabled, or switches simultaneously in both the [PVW] pane and [PGM] pane when [Direct Mode] is enabled.

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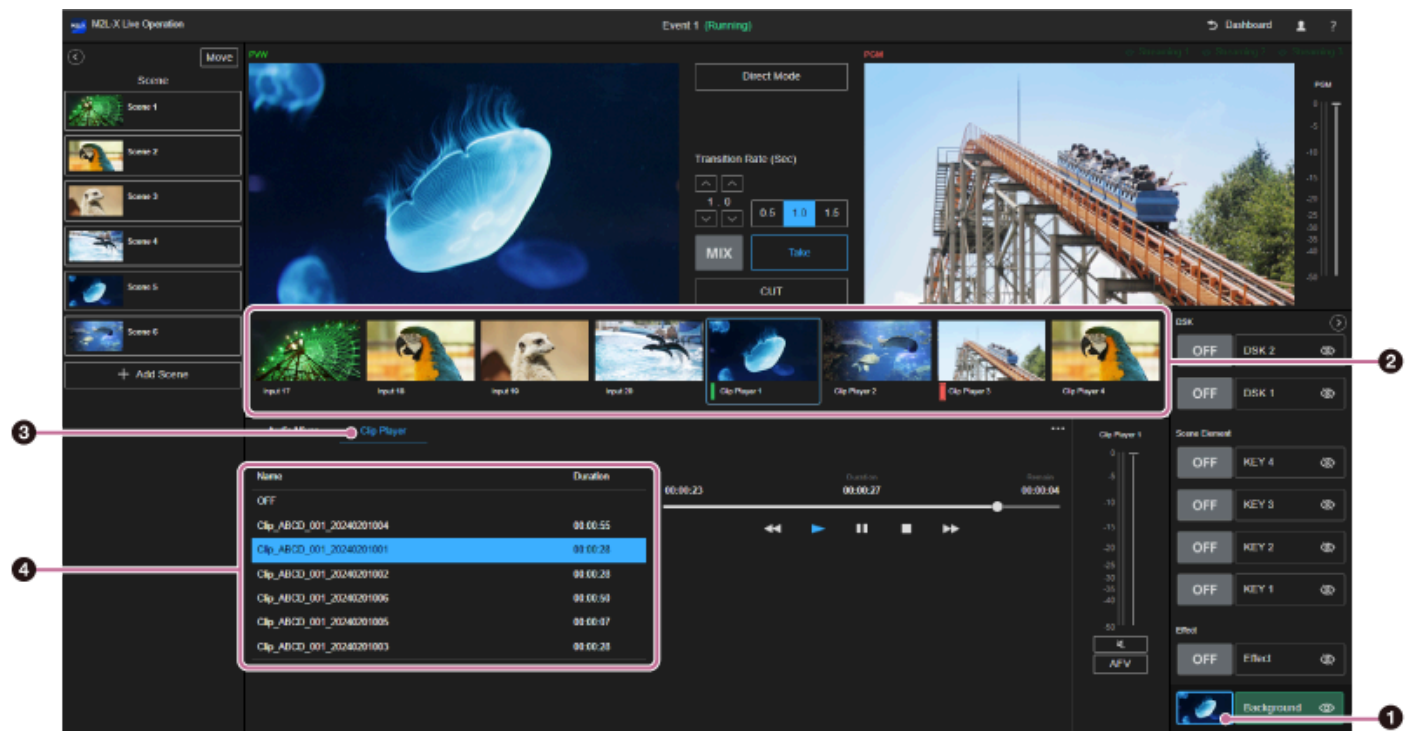


## Assigning a Video to a Clip Player

You can assign a video clip to a clip player ([Player 1] to [Player 4]) in the [Source] pane. Video clips must be uploaded for an event beforehand.

### Note

- Content for use in a clip player comprises the video clips displayed on the [Clip] tab of the [File Manager] screen.
- [Player 1] to [Player 4] are displayed only when [Streaming Type] is set to [Clip Player] on the [Switcher Input] tab of the [System Settings] screen and a switcher input has been assigned to [Player 1] to [Player 4].



- 1 Select a thumbnail from one of [Background] layer and [Layer 1] to [Layer 4] layers in the [Layer] pane.

### Hint

- The [Layer 1] to [Layer 4] layers may not be displayed, depending on the preset selected on the [Effect] layer.

- 2 Select one of [Player 1] to [Player 4] layers in the [Source] pane.

- 3 Select the [Clip Player] tab in the Edit/Control pane.

The [Clip Player] tab setup items are displayed.

- 4 Select the video to assign from the list of video clips.

The selected video is assigned to the clip player and the selected video is displayed on the thumbnail of the clip player selected in step 2 in the [Source] pane.

You can monitor the operation and playback position of the selected video clip on the [Clip Player] tab.

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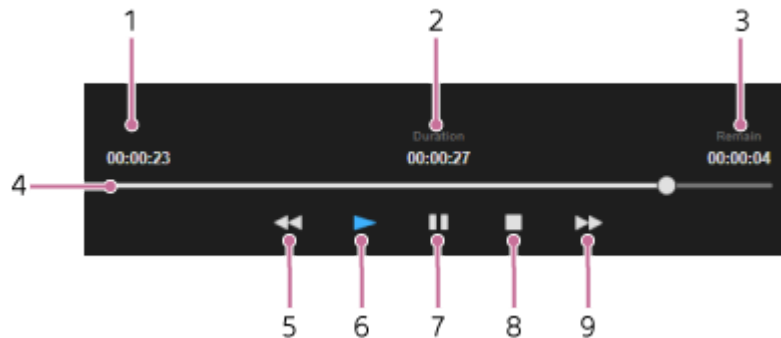
## Related Topic

- [Uploading/Downloading/Deleting Files](#)
- [Setting PinP](#)
- [Clip Player Operations](#)

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## Clip Player Operations



You can control playback of the video assigned to a clip player using the control buttons on the [Clip Player] tab in the Edit/Control pane. The duration, current playback position, and remaining time of a video, and a progress bar are also displayed.

When a playback control button is pressed, the button lights up and the video executes the action of the active button. When a video is stopped, all the playback control buttons turn off.

The function of each part is described below.

1. Playback time indicator: Displays the elapsed time between the start of the clip and the current playback position.
2. [Duration]: Displays the length of the clip.
3. [Remain]: Displays the remaining playback time of the clip.
4. Progress bar: Displays the playback position of the clip. You can move the slider to move to any position in the clip.
5. Fast reverse: Rewinds the video. If you press the button again during fast reverse, the fast reverse speed changes in the order of 1× speed → 5× speed → 10× speed. The speed is displayed above the button.
6. Play button: Plays the video.
7. Pause button: Pauses the video.
8. Stop button: Stops the video and returns to the beginning.
9. Fast forward: Fast forwards the video. If you press the button again during fast forward, the fast forward speed changes in the order of 2× speed → 5× speed → 10× speed. The speed is displayed above the button.

### Related Topic

- [Assigning a Video to a Clip Player](#)

M2L-X

## Scenes

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### Description

You can save various content composited with the preview output video and related settings together as a “scene” on this system. Saved scenes are displayed in list view in the [Scene] pane.

You can instantly apply multiple elements to the program output by recalling a saved scene and executing a transition on the preview output. After recalling a scene, you can also change settings to include elements not saved as part of the scene.

### Hint

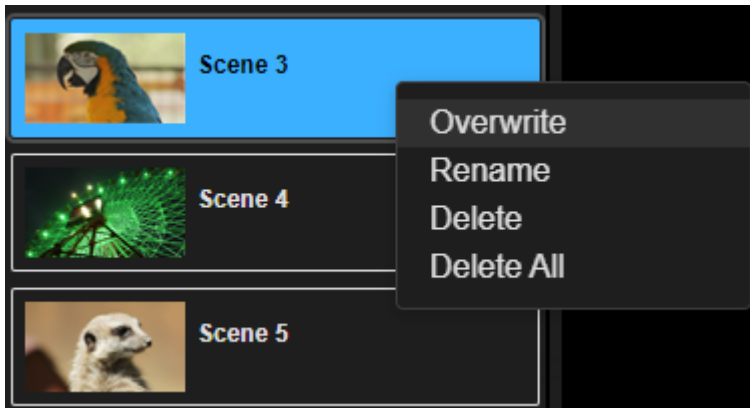
- Elements saved as a scene are principally the content related to the preview output. Elements not linked to the preview output, like a DSK and audio settings are not saved.

### Elements saved as a scene

- **Transition control pane**
  - Selected transition effect
  - Configured transition duration
- **[Layer] pane**
  - Selected layer
  - Show/hide state of [KEY 1] to [KEY 4] layers
  - Show/hide state of [Layer 1] to [Layer 4] layers
  - Show/hide state of [Effect] layer
- **[Source] pane**
  - Video used on the [Layer 1] to [Layer 4] layers
  - Video used on the [Background] layer
- **Edit/Control pane**
  - Selected tab
  - [Clip Player] tab
    - Assigned video file
  - [KEY] tab
    - File and adjustment values of the image configured as a KEY
  - [Effect] tab
    - Selected preset and adjustment values
  - [Transition] tab
    - Selected transition effect

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## Creating/Overwriting/Renaming/Deleting a Scene



### Creating a scene

Press the [+ Add Scene] button at the bottom of the [Scene] pane to save the current content as a new scene. The new scene is added above the [+ Add Scene] button and is highlighted.

#### Hint

- The scene thumbnail shows the content displayed in the [PVW] pane at the moment the scene was created.
- The scene name is assigned automatically. You can rename a scene using [Rename].
- Up to 99 scenes can be created.

### Overwriting a scene

Recall a scene by selecting the scene from the list in the [Scene] pane. Make any required changes to the recalled scene, right-click the scene you want to overwrite in the list in the [Scene] pane, and select [Overwrite] from the displayed context menu.

### Renaming a scene

Right-click the scene you want to rename in the list in the [Scene] pane, and select [Rename] from the displayed context menu. Enter a new scene name in the dialog that appears and press the [Apply] button to rename the scene.

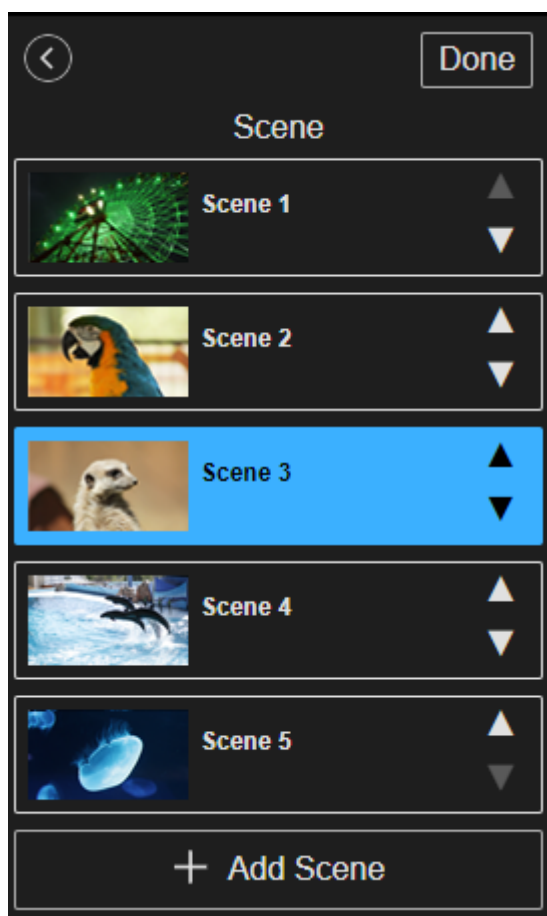
### Deleting a scene



Right-click the scene you want to delete in the list in the [Scene] pane, and select [Delete] from the displayed context menu. Press [YES] in the confirmation dialog to delete the scene.



If you select [Delete All] in the displayed context menu and press [YES] in the confirmation dialog, all scenes registered in the event will be deleted.

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## Sorting Scenes

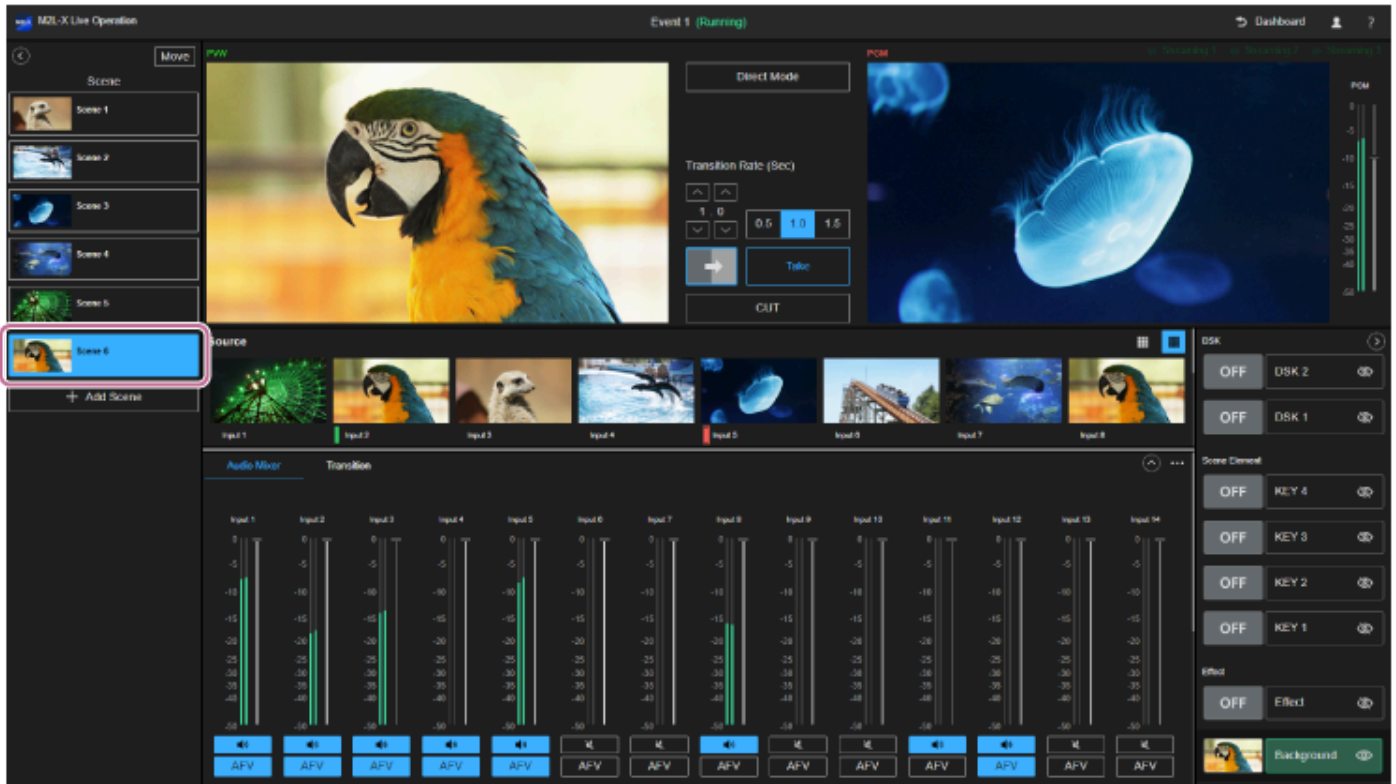


Press the [Move] button at the top of the [Scene] pane to activate sorting mode. In sorting mode, the [Move] button changes to a [Done] button, and the  (Move up) button and  (Move down) button are displayed on the right side of each scene.

Press the  (Move up) button and  (Move down) button of each scene to move the scene up/down by one row. Press the [Done] button to exit sorting mode.

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## Recalling and Executing a Scene



### Recalling a scene

Recall a scene by selecting the scene from the list in the [Scene] pane. The recalled scene is highlighted and the content of the scene is reflected in the [PVW] pane and other places.

#### Hint

- When a scene is recalled, it is not reflected in the [PGM] pane, even when [Direct Mode] is enabled.

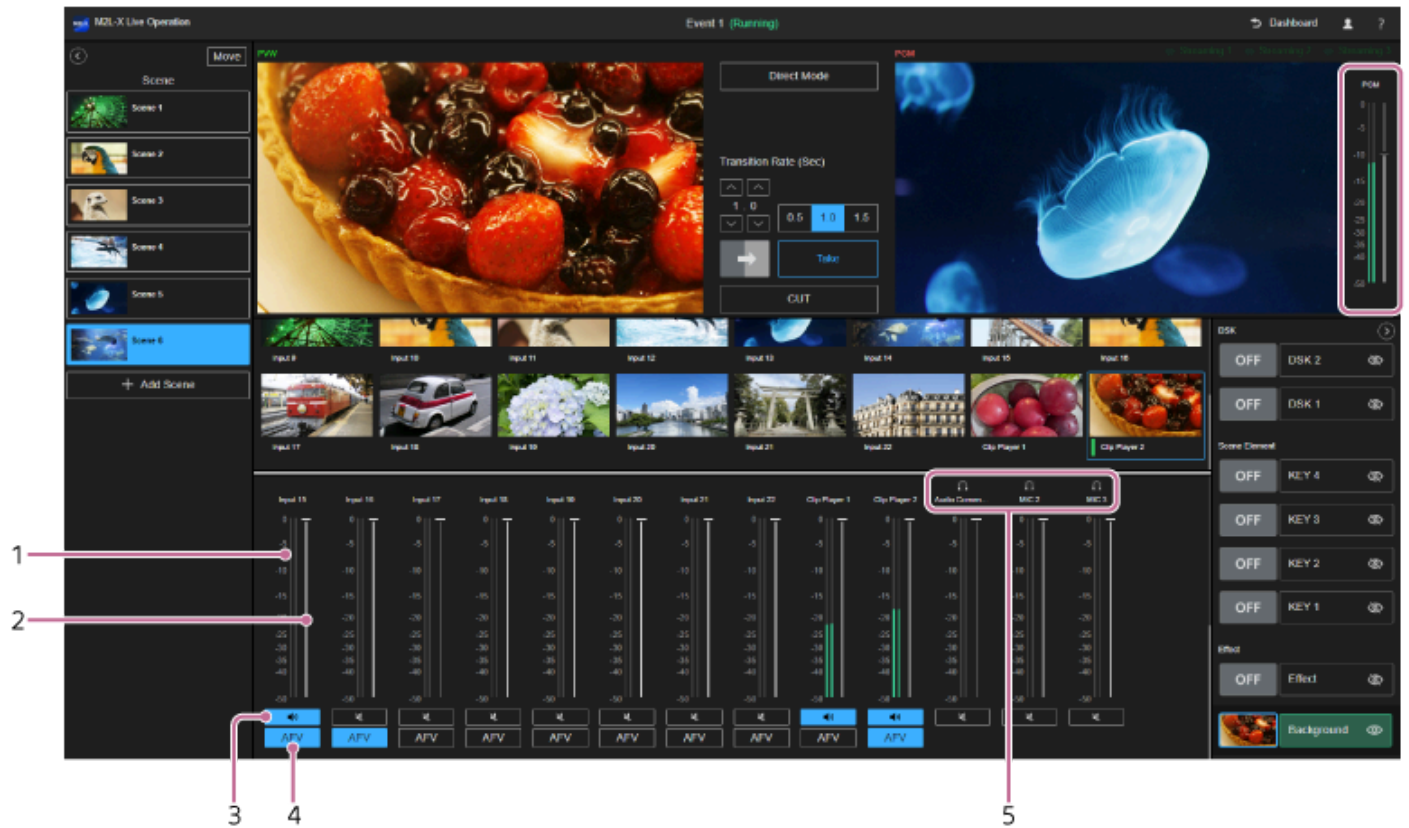
### Executing a recalled scene (program output)

Check the content of the recalled scene in the [PVW] pane and perform any required tasks before switching to program output. For example, adjust the playback position of the clip player video or switch the show/hide state of the KEY image. To set the recalled scene as the program output, execute a transition using the [CUT] button or [Take] button.

#### Related Topic

- [Switching Using the Cut Effect](#)
- [Switching the Program Output Directly](#)

## Adjusting the Audio



You can adjust the volume and check the audio level of each input device and clip player on the [Audio Mixer] tab in the Edit/Control pane. If a source with audio is selected in the [Source] pane, you can also adjust the volume and monitor the audio level on tabs other than the [Audio Mixer] tab (selected source only).

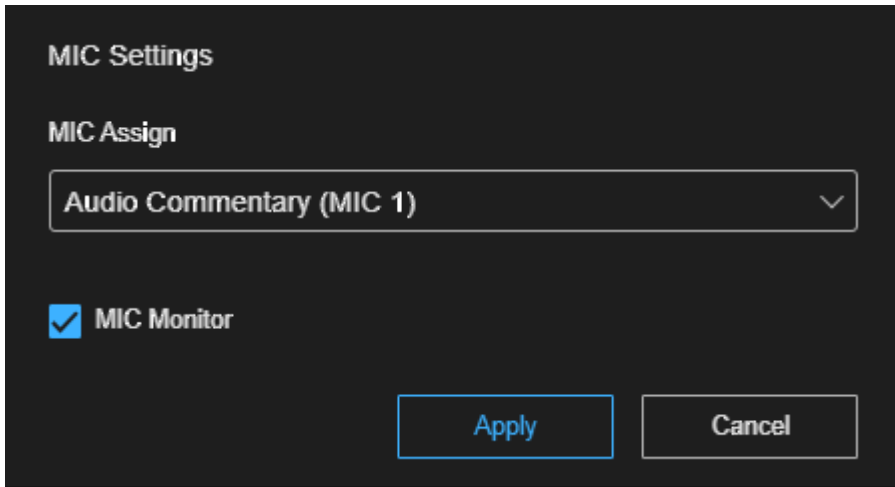
You can adjust the volume and monitor the audio level of the program output in the audio adjustment pane of the [PGM] pane.

1. **Audio level meter:** Displays the left/right audio level.
2. **Volume fader:** Adjust the volume by dragging the fader bar.
3. **[Speaker icon] (Audio on)/ [Muted icon] (Audio off):** Press to toggle the audio channel on/off. Lit when turned on.
4. **[AFV] (Audio Follow Video) button:** When you press the button, the button lights up and the audio of the linked video is output. When the video is the program output, the audio is output. When the program output is switched to another video, the audio automatically switches to the muted state. When the button is not lit, the audio is output according to the [Speaker icon] (Audio on)/ [Muted icon] (Audio off) setting.
5. **[Microphone icon] (Audio monitor on)/ [Muted icon] (Audio monitor off) (audio channels for audio commentary only):** When microphone audio monitoring is enabled, [Microphone icon] (Monitor on) is displayed and the audio from each microphone can be monitored. When disabled, [Muted icon] (Monitor off) is displayed and the audio from each microphone cannot be heard.



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## Audio Commentary Function




You can use audio from an assigned microphone on the [MIC Input] tab of the [System Settings] screen as an audio commentary source.

### Hint

- The [MIC Settings] dialog settings are stored for each user. This does not affect other users using the same event.

### To enable audio commentary

Specify the microphone to use for audio commentary using the [MIC Settings] dialog.

Click  (Options) at the top right of the [Audio Mixer] tab and select [MIC Settings] to display the [MIC Settings] dialog. Select the microphone to use from the [MIC Assign] list and press the [Apply] button.

The [MIC Settings] dialog closes and the [Audio Mixer] tab switches to a state where only the audio from the selected microphone can be adjusted.

### To disable audio commentary

Select [Not Assigned] in the [MIC Assign] list in the [MIC Settings] dialog and press the [Apply] button. The [MIC Settings] dialog closes and the [Audio Mixer] tab switches back to the state where audio for all channels can be adjusted.

### To exclude the audio of a microphone for audio commentary from monitoring

Select whether to monitor the audio of the microphone for audio commentary using [MIC Monitor] in the [MIC Settings] dialog. The default setting is to monitor the audio. To disable monitoring, clear the check mark from [MIC Monitor] and press the [Apply] button.

### Note

- The [MIC Monitor] settings are common for all audio commentary microphones. It is not possible to monitor a specific microphone only.

### Related Topic

- [Configuring Microphone Audio Input for Audio Commentary](#)



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## Specifications

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### Video switching

#### Configuration

**Input:** Primary video input × 24<sup>\*1</sup>, clip player × 4

**Output:** Program output × 3<sup>\*2</sup>

\*1 When using an option license, you can select 24 from 48 inputs.

\*2 When using an option license, you can use 33 outputs.

#### Composited layers

Background, KEY × 4<sup>\*</sup>, PinP × 4<sup>\*</sup>, DSK × 2

\* KEY and PinP can be composited on up to four layers.

#### Video effects

CUT, MIX, WIPE × 6, clip transition (CG WIPE)

### Audio mixer

#### Configuration

**Input:** Stereo embedded audio × 24, stereo/mono × 3

**Output:** Program (stereo)

#### Functions

Output level adjustment, AFV (Audio Follow Video), channel disable (muting)

### Streaming

#### Supported input formats

- Video + audio
  - Protocol: SRT/RTMP/RTMPS/NDI High Bandwidth
  - Video codec: H.265/HEVC, H.264/AVC
  - Resolution: 1920×1080
  - Frequency/scan method: 59.94p, 50p, 59.94i (SRT only), 50i (SRT only)
  - Dynamic range/bit depth/color gamut: SDR/8 bits/BT.709, HDR(HLG)/10 bits/BT.2020 (only 4:2:0 chroma sampling is supported)
  - Buffer: 0 msec to 10000 msec (SRT only)
  - Audio codec: AAC
  - Sample rate: 48000 Hz
- Audio (MIC Input)
  - Protocol: SRT
  - Buffer: 200 msec to 1000 msec
  - Codec: AAC
  - Sample rate: 48000 Hz

#### Supported output formats

- Video + audio

- Protocol: SRT/RTMP/RTMPS/NDI High Bandwidth
- Video codec: H.265/HEVC, H.264/AVC
- Resolution: 1920×1080
- Frequency/scan method: 59.94p, 50p
- Video bit rate: 3000 kbps to 25000 kbps
- Buffer: 0 msec to 10000 msec (SRT only)
- Audio codec: AAC
- Sample rate: 48000 Hz
- Audio bit rate: 64 kbps to 384 kbps

## Supported files

### Images

- File format: RGB 24-bit (32-bit with alpha channel) JPEG or PNG format
- Image size: 1920×1080 (max)

### Supported animations for transitions

- File format: RGB 24-bit (32-bit with alpha channel) series of PNG images compressed in ZIP format<sup>\*</sup>
- Image size: 1920×1080 (max) (each PNG file is the same image size)

<sup>\*</sup> A transition animation is created by displaying ZIP-compressed PNG images consecutively in numerical order.

### Video

- File format: MP4 (AVC standard only)<sup>\*</sup>
  - <sup>\*</sup> Fragmented MP4 is not supported.
- Video + audio
  - Video codec: H.264/AVC
  - Resolution: 1920×1080
  - Frequency/scan method: 59.94p, 50p
  - GOP size: 120 (max)
  - Color depth: 8 bits
  - Color space: YCbCr 4:2:0
  - Color gamut: Rec. 709
  - Audio codec: AAC
  - Sample rate: 48000 Hz
  - Number of quantization bits: 16 bits, 24 bits
  - Monaural audio, stereo audio
- Maximum bit rate: 50 Mbps
- File size: Unlimited

## Supported graphics input

HTML5, NDI (with  $\alpha$  channel)

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