

Rev 1.02

AirX 5.6

User Guide



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TABLE OF CONTENTS

Preface and Legal notice	5
AirX User Guide	5
AirX structure	6
Components and application	6
Technical specifications	6
Input interfaces	6
Output interfaces	6
FILL+KEY graphics	7
PCI-E Capture cards and decoders	7
Formats and codecs SD/HD/UHD (media files)	7
Automated AD insertion	7
External devices and services	7
Preparing for installation (Server-side)	7
Hardware requirements	7
Preparing for installation (Client-side)	9
Hardware requirements	9
Server-side component installation	9
License	14
License key activation, license update.	14
Server interface, settings	18
System startup, settings	18
Save and import configuration	20
System logs	22
Users	23
User account interface	23
Set up the user permissions	24
Configuring a Playout channel	25
Predicting GPU performance. Throughput optimization and resource allocation	
Playout channel addition and setup	
Channel settings, Channel resource tree	
Users	
Channel redundancy (1+1 redundancy settings)	
Media folders and content replacement	
Content auto download and schedule auto import settings	
Channel TAGs and EPG	
Channel live inputs	



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

DVB/ATSC UDP IP source	
NDI source	45
SRT source	
SRT source setup	
SDI source	
WEB source	53
ST2110 source	54
Diagnostics tools	
Live sources connection and distribution	
Multiple source modes	60
LIVE mode	61
WEB URL mode	63
External devices	
Video router (matrix)	66
Headend	70
GPIO Presets	71
Sending commands using AirX schedule (GP0)	74
AirX playback control with an external devices (GPI)	75
Soft GPI events and features	76
Outputs	
Outputs UDP Output	
-	81
UDP Output	81 88
UDP Output RTSP Output	
UDP Output RTSP Output HLS Output	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming)	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes.	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes SRT Output settings	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes. SRT Output settings NDI Output	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes. SRT Output settings NDI Output SDI Output	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes. SRT Output settings NDI Output settings NDI Output SDI Output LOG files - definition & overview	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes SRT Output settings NDI Output settings NDI Output SDI Output LOG files - definition & overview How to: View and save log files.	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output. SRT Output. Caller/Listener modes. SRT Output settings NDI Output settings NDI Output SDI Output LOG files - definition & overview How to: View and save log files System monitoring tools Troubleshooting and Initial Diagnosis Support	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes. SRT Output. Caller/Listener modes. SRT Output settings NDI Output settings NDI Output LOG files - definition & overview How to: View and save log files System monitoring tools Troubleshooting and Initial Diagnosis	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes SRT Output settings NDI Output settings NDI Output SDI Output LOG files - definition & overview How to: View and save log files System monitoring tools Troubleshooting and Initial Diagnosis Support Client-side component installation Preparing for installation (Client-side). Hardware requirements	
UDP Output RTSP Output HLS Output RTMP Output (YouTube streaming) Mpeg DASH Output SRT Output. Caller/Listener modes. SRT Output settings NDI Output settings NDI Output SDI Output LOG files - definition & overview How to: View and save log files System monitoring tools Troubleshooting and Initial Diagnosis Support	



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

AirX Launcher	119
Authorization, launch, start interface	119
AirX AppLauncher configuration and setup	120
AirX AppLauncher configuration and setup in Redundancy mode	125
Changing the connection mode	129
User applications, definition & overview	
User profiles and access	132
AirX play (Client-side). Initial interface	
Authorization. Launch. Redundancy mode	132
Channel Manager	
User interface description	134
Channel Manager main window	134
Channel Source window	141
Source content browser window	144
Channel Preview window	155
Channel OnAir window	155
Channel OnAir window, Playlist mode	156
Channel OnAir window, Schedule mode	161
Item's Scenes window. Channel CG	166
Item's Output Events window	167
Channel Audio ctrl window	167
Channel Logo Slot window	168
Channel Manual GFX ctrl window	
Channel Auto GFX ctrl window	170
Channel Player window	171
Manual Events ctrl window	175
Channel command pane	175
Schedule Editor window	
Edit windows context menu	
Countdown window	184
Creating a custom layout	184
Schedule Fields	
Channel Manager Control buttons	191
States of the schedule elements. The color-coding and navigation	
Underrun/Overrun conditions	
The different types of primary events	194
Scheduling of Simple TV channels	
How to: Prepare the schedule	



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

How to: Make the simple schedule of files	
How to: Edit a file duration (trim)	
How to: Rename a video file	
How to: Add and edit a Block	
How to: Control the CG from the schedule	
Subtitling	207
Schedule automatic import	
Schedule playback	
Live streams and frequently changing schedules. Live video workf	low214
Fixed time	
Underrun	
Overrun and frequently changing schedules	217
Manual GC/Events	
Command control pane	220
Live streams and additional playlists. Prescheduling workflow	220
Live streams and additional playlists. Prescheduling workflow Schedule/Playlist modes	
	220
Schedule/Playlist modes	
Schedule/Playlist modes Manual GC/Events	220 223 224
Schedule/Playlist modes Manual GC/Events Command control pane	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import AD insertion markers	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import AD insertion markers Input redundancy	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import AD insertion markers Input redundancy AirX channel redundancy (1+1)	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import AD insertion markers Input redundancy AirX channel redundancy (1+1) Color-coding of redundancy states	
Schedule/Playlist modes Manual GC/Events Command control pane AD insertion (DAI) workflow Schedule automatic import AD insertion markers Input redundancy AirX channel redundancy (1+1) Color-coding of redundancy states Synchronization of schedules	



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Preface and Legal notice

AirX User Guide

"AirX User's Guide" is an operational document for describing the installation, configuration and management of the AirX software package.

AirX integrated mission-critical playout broadcast automation system, offering complete IP/SDI multi format flexibility with UHD/HD/SD support, delivering an end-to-end workflow ecosystem from ingest to compliance recording and media management.

As a software-based ecosystem, AirX may be deployed on premise, in the cloud or in a hybrid environment. The architecture affords speedy deployment and ease of launching new channels and services.

AirX enables you to broadcast multi-format, multichannel UHD 4K, HD, SD with frame accuracy. The system has built-in low latency switching/routing of input and output signals and full remote operational workflow. Encode/transcode multiple outputs per channel in NDI, ST2110, SRT, UDP, RTMP, HLS, MPEG-Dash.

Copyright.

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Thank you for purchasing our product!



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AirX structure

Components and application

AirX, as a broadcast automation system, has a distributed client-server architecture, including:

- Server components that are running as the background process, according to configuration settings. Settings have to be performed by AirX Control server application.
- Client components for managing the broadcast playout server and control over the server functionality. Management have to be performed by Channel Manager client application
- Client components for creation of on-air graphic design scenes and/or graphics conversion to the internal graphic scene format for AirX software (Scene Editor client application).

Component Interaction:

- 1. The server operates in the background as a windows system process and provides automatic execution of the target functions of the broadcast playout server
- 2. Server settings are stored in *.xml configuration files. Changing the settings (configuration file) from the side of the client application is not possible.
- 3. The components interact via the Ethernet network, using the UDP or TCP IP

Technical specifications

Input interfaces

- SMPTE-2110 4K UHD
- NewTek NDI®
- SD/HD/UHD-SDI (Embedded Audio)
- Composite S-video
- YUV Analog Audio: balanced/unbalanced
- IP TS (MPEG 2, AVC/H264, HEVC/H265)
- HDMI (576, 720, 1080, 2160)
- WEB RTMP
- RTSP
- HLS Multi-Bitrate
- MPEG-Dash
- Haivision SRT

Output interfaces

- SMPTE-2110 4K UHD
- NewTek NDI®
- SD/HD/UHD-SDI (Embedded Audio)
- Composite S-video
- YUV
- Analog Audio: balanced/unbalanced
- IP TS (MPEG 2, AVC/H264, HEVC/H265)
- HDMI (576, 720, 1080, 2160)



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- WEB RTMP
- RTSP
- HLS Multi-Bitrate
- MPEG-Dash
- Haivision SRT

FILL+KEY graphics

- SD/HD/UHD-SDI
- NewTek NDI®

PCI-E Capture cards and decoders

- NVIDIA
- Intel
- Mellanox technologies
- Blackmagic design
- DekTec
- A.J.A.
- BirdDog
- Stream Labs

Formats and codecs SD/HD/UHD (media files)

- Formats: AVI, MOV, MXF, MP4, MPG, BMP, TGA, GIF, PNG, JPG, TIF
- Codecs: DVCAM, DVCPR025, DVCPR050, DVCPR0100, HDV, IMX (30,40,50), XDCAM EX (SP, HQ), XDCAM HD (LP, SP, HQ), XDCAM HD422, DNxHD (36,145,220), AVC/ H-264, MPEG2 GOP, Apple ProRes.

Full list of supported formats: **Table of codecs**

Automated AD insertion

- Input events: DTMF, SCTE-35/104
- Output events: SCTE-35/104 TS IP, HLS, SCTE-104 in SDI.

External devices and services

AirX Control application allows connecting and managing of matrix switchers, redundancy devices, headend platforms and external graphics systems, connected through RS-232/422, GPI, SOFT GPI, Telnet, etc.

Preparing for installation (Server-side)

Preparing for installation includes reviewing system requirements and preinstallation revising the machine notes.

Hardware requirements

Requirements for supported operating systems:

- "Windows 10" x64 build 1909 or higher



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- "Windows Server 2019" x64 build 1909 or higher

Windows Server 2019 is recommended for server platforms. Windows 10 is recommended for server platforms, workstations and desktop PCs.

Before the initial installation of the software, it is necessary to preliminarily prepare the OS:

- Check and install the latest motherboard drivers
- Update Windows to apply the latest Microsoft updates and patches
- Check local NTP server settings AirX applications operates with NTP
- Adjust the power mode in Windows high performance. Turning off disks and the display must be prohibited
- Remove unnecessary services from startup and Windows Update

Recommended graphics card driver versions:

- NVIDIA GeForce driver build 27.21.14.5167
- NVIDIA QUADRO driver build 26.21.14.4219
- Blackmagic DeckLink driver build 12.2.2
- Dektec DTA SDI card driver build 4.28.0 3

Minimum hardware requirements:

1 standard definition (SD) channel on one server:

- "Intel Core i5 gen 8" or higher;
- 8 Gb RAM;
- NVIDIA GeForce GTX1060 GPU supporting "DirectX 11" or higher

Simultaneous operation of 2 high definition (HD) channels or 4 standard definition (SD) channels on one server:

- "Intel Core i7 gen 8" or higher;
- 8-16 Gb RAM;
- NVIDIA GeForce GTX 1060 GPU supporting "DirectX 11" or higher

Simultaneous operation of 2-5 high definition (HD) channels or 1 ultra-high definition (UHD) channel on one server:

- "Intel XEON Silver 4214R";
- 24-48 Gb RAM;
- "NVIDIA QUADRO P2200/RTXA4000" GPU supporting "DirectX" 11 or higher.

For media library it is strongly recommended to use an additional HDD/SSD or external storage.

Notes:

- 1. It is important to use memory in multi-channel mode, for example 4x4Gb, 6x8Gb or 8x8Gb cards.
- For the broadcast playout server, it is recommended to use a fault-tolerant RAID array of high-speed hard drives, at least 7200 rpm, SATA-III or SSD to create internal disk storage. We recommend using RAID 5, RAID 6, or RAID 10. Make sure the selected hard drives are recommended by the manufacturer for usage in RAID storage systems.
- 3. It is strongly recommended to separate file data sources and data streaming between two physically separated networks. Make sure all your servers and



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workstations have two Gigabit Ethernet adapters. We recommend using professional network cards such as Intel I350.

4. For any nVidia graphics card, make sure that the card is installed in a full-size PCIe x16 Gen.2 or Gen.3 slot and the graphics card driver is up to date. In addition, we recommend checking the format support and the number of supported sessions on the nVidia website:

https://developer.nvidia.com/video-encode-decode-gpu-support-matrix

These guidelines are for informational purposes only. The final configuration for each specific task must be calculated individually by Telestrider Company.

Preparing for installation (Client-side)

Hardware requirements

Requirements for supported operating systems:

- "Windows 10" x64;
- "Windows Server 2019" x64;
- Local Admin Rights.

Minimum hardware requirements:

- "Intel Core i5 gen 8" or higher;
- Minimum 8 GB of RAM;
- "Intel UHD Graphics" or "NVIDIA" supporting "DirectX 11" or higher;
- Monitor with a screen resolution of 1920x1080 or more;
- Audio playback system.

Note: It is recommended to install two monitors: a monitor with a screen resolution of 1920x1080 or more for the client workplace, and SDI monitor to control the quality of live sources.

Server-side component installation

For installation of the AirX software, it is necessary to check the readiness of hardware and log in into PC's operating system with Admin rights

Then execute the AirX installer file you received from Telestrider technical support team.

*Since the AirX software has client-server architecture, the installer must be downloaded to both the broadcast playout server and the client workstation.

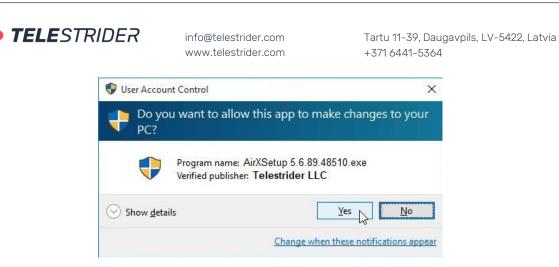


Figure 1. User Account Control

Next, the installation Wizard window will show the license agreement. Choose the language and read the License terms and conditions.

X AirX Solution ×	
Welcome 🛛 🛛 🛛 AirX Play	
1. The license provided by the Licensor under the present Agreement includes the following ways and volume of use of the Software:	^
1.1. To make installations of the Software on the COMPUTER (to create backup copies of the Software copy installed on the COMPUTER) only for its application within the transferred right.	
1.2. To reproduce (to apply) the Software in the form of an object code by record in random access memory of the COMPUTER for the purpose of direct execution of instructions of the Software in the COMPUTER central processor, provided that simultaneous application of two and more copies of the Software on one COMPUTER is forbidden.	
1.3. To apply at the same time or at different times, in common or separately, the Software installed on different COMPUTERS, copies in quantity and a functional purpose determined respectively by quantity transferred under the present Agreement.	
1.4. To make copies of record of contents of the Software on the carriers providing long-term safe data storage in quantity transferred under the present Agreement.	•
Select language: English 🔹	
I agree to the License terms and conditions	
CANCEL BACK NEXT	

Figure 2. License terms and conditions

After reading, check the box to agree to the terms and click **Next**. The following interface will give you the options to install the components.

WARNING: if you do not agree with the License terms please terminate the installation by **Cancel** button.

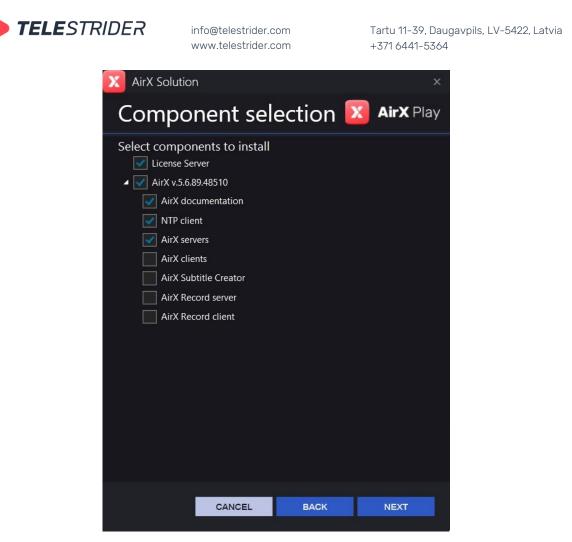


Figure 3. Component selection

License Server performs the operation of the software components in accordance with the purchased licenses. For the detailed description of setting up the License Server, see the **License** chapter.

AirX v.NN – broadcast automation system components, including:

- AirX documentation self-explanatory
- NTP client provides synchronization of the broadcast playout server and the client application with NTP server. By default, AirX is synchronized with system time of the server
- AirX servers software components, necessary for the operation of the broadcast playout server
- AirX clients software components for a remote client application.
- AirX Subtitle Creator built-in subtitle creation tools
- AirX Record server software components of the AirX recording server
- AirX Record client software components for a remote recording client application

Check the boxes shown in Figure 3 to install AirX on the broadcast playout server: License Server, AirX documentation (optional), NTP client and AirX servers. Then click **Next**. In the next window you will see a list of components, selected for installation:



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Figure 4. Selected components

Click **Back** to make changes to the list of components, Click **Next** to confirm the installation of the components.

On next step, the window will contain the checkbox to start AirX services after installation. For the initial installation of AirX the checkbox is inappropriate, because AirX services (such as the configured input signal, playout channel, or channel output stream) do not exist yet. When updating the software with configured services, set the checkbox to immediately start the services after installation.

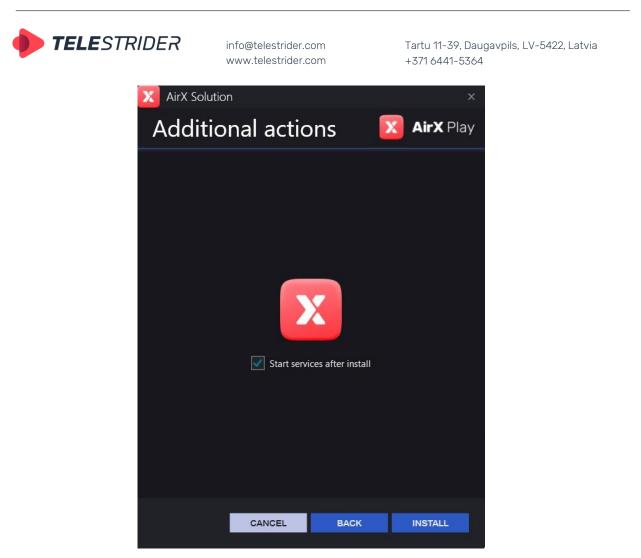


Figure 5. Start services after install

Click **Install** to start the process. Installation progress bar will be shown in the same window

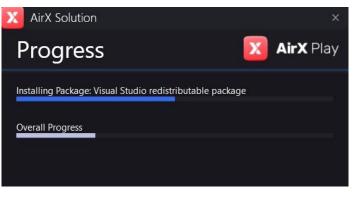


Figure 6. Installation progress

After the installation process is finished, you will be prompted to launch the Control application to configure services and close the installer window.

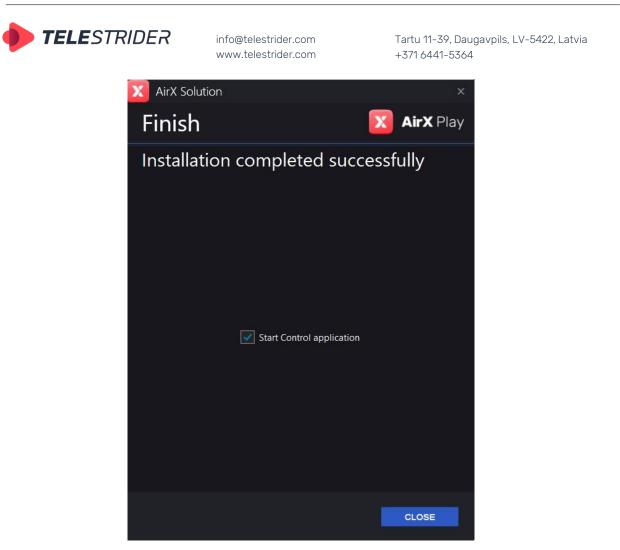


Figure 7. Installation completed

After closing the installation app, the following desktop shortcuts will be created:



Figure 8. AirX shortcuts

AirX Control - the configurator launcher for setting up the Server

AirX Quick start guide - self-explanatory

License

License key activation, license update.

After installing the AirX software, you must install license keys. Please contact Telestrider technical support team, which will generate a personal license key associated to the hardware configuration of each specific broadcast playout server. Provide the technical support the **HW ID** of your server to generate a personal license



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key. To get a unique HW ID, find the green shield icon in the status bar (shown in the figure below):

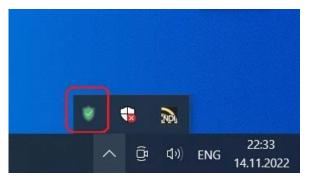


Figure 9. License server icon

ATTENTION: during the first installation of the License server, a red exclamation mark (!) may be displayed instead of a green shield.

Click on this icon to open the License server interface:

	A:-Y			1.02
✓ 600000000008888888 600000000000088888888 60000000000000888888888 State: Connected!	AirX num num num num num num num num num num	Media_Copy (0/5) WEB_IP_Outputs (0/5) TS_IP_Outputs (0/5) ADV_DETECT (0/5) SUBS_TRACKS (0/5) HD_channels (0/5) AV_Outputs (0/5) UHD_channels (0/5) CG_channels (0/5) Loudness (0/5) REMOTE_CONTROL Ext_device_event Eve_Fill_Key_Intput(0/5) ADV_INCERT ADV_INCERT (0/5) HARDSUBS_channels Schedule_Reserve	(0/5)	
The license was issued: 09.02.2022 14:20:43				
Local hardware id: DC597CDC597DC59781 DC597CDC597DC59781 DC597CDC597DC59781 597CD				
\mathcal{L}				~
			-	

Figure 10. License server interface

The License server generates a Hardware ID (outlined in red) using built-in algorithm to make it unique. Click **the Copy HW to clipboard** button and send the ID to technical support via e-mail, Skype, etc.

Technical support will assign licenses to your key and send you back a special *.lic file, based on your Hardware ID. Save the license file to the broadcast playout server



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(by default, it will be saved in C:\Users\user\Downloads folder). Then click the **Install license key file** button, find the license file and open it. The server will install all your licenses. You can see them in the right pane of the License server window.

X AirX License server 1.0.341.512	74	- 🗆	×		
✓ 60000000008888888 A	irX num Media_Copy num WEB_IP_Outputs num ADV_DETECT num SUBS_TRACKS num AV_Outputs num AV_Outputs num UHD_channels num CG_channels	(0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5)			
	This PC				×
	\leftarrow \rightarrow \checkmark \uparrow \square $\stackrel{\bullet}{\square}$ $\stackrel{\bullet}{\sim}$ New	folder > Lic_keys	✓ Č S	earch in: Lic_keys	,
600000000008888888	Organize New fold	der	~		•
State: Connected!	3D Objects	^ Name		Date mo	dified
The license was issued: 09.02.2022 14:20:43	Desktop	6000	00000008888888.lic	29.12.202	1 11:03
	🕳 Local Disk (D:)				
Local hardware id: DC597CDC597DC55781	Network DESKTOP- RDQ12F0	~ <		_	>
DC597CDC597DC59781	File n	ame: 6000000000000	1888888 lic 🗸	oftware key (*.lic)	~
DC597CDC597DC597 597CD				Open Cano	cel
Copy key ID to clipboard Copy H	IW ID to clipboard Install license	key file Config ser	vice		

Figure 11. Install license key file

To update the license key, click the **Remove license key file** button, and then install the new license using the method, described above.

All of the above will activate the license key for all Telestrider products installed on your server. But then you have to transfer licenses to each software product (AirX or AirX Record server, or other), and register your license key in the application.

For the AirX server, launch the AirX Control application and expand the Server resource tree. Browse to the License Info branch.

On the right pane of the application window you will see an editable License ID field. Copy the license key number from the License server application into this field.



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60000000008888888	AirX	(0.(5)		
600000000008888888 State: Connected!	num Media_Copy num WEB_TP_Outputs num ADV_DETECT num ADV_DETECT num SUBS_TRACKS num HD_channels num AV_Outputs num UHD_channels num CG_channels num Loudness (0/5) num REMOTE_CONTF num Ext_device_event num Live_Fill_Key_Intpi num ADV_INCERT num ST2110 (0/5) num HARDSUBS_char num Schedule_Reserve	(0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5) (0/5)	(0/5)	
The license was issued: 09.02.2022 14:20:43 Local hardware id:				
DC597CDC597DC59781 DC597CDC597DC59781 DC597CDC597DC59781 597CD				

Figure 12. Key ID copy

🛱 AirX Control	
Configuration	
Save Clear Undo Redo Delete	Start Stop Restart Export
Edit	
🛇 🖵 AirX	❤ License settings
緣 User accounts	License
🔑 License info	License ID: 6000000008888888
∃ Assigned lives	
券 External devices (plugins for	♥ License info
🛐 Playout channels	License info: Key ID: 60000000008888888
	Technical Support
	License Used / Available
	SD Channels 0 / 5
	HD Channels 0 / 5
	UHD Channels 0 / 5
	AV Outputs 0 / 5
	UDP TS Outputs 0 / 5
	Internet Outputs 0 / 5

Figure 13. Key ID in AirX Control app

After copying the Key ID to AirX, click **Save** and then **Restart** in the main menu of AirX Control app to save the license key settings. Now you can work with the purchased license. In the right pane of the AirX Control window you can see a list of available/used licenses, and the expiration date of your key.



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ATTENTION: If you update the license key, do not forget to save changes after updating and restart the AirX services by pressing Save and Restart. This guarantees that the changes inside the AirX services are applied.

Server interface, settings

System startup, settings

To configure AirX, run the AirX Control configurator from your desktop. The following interface will be launched:

Configu				– 🗆 🗙 Abou	t
Save	Clear Undo Redo Delete	Start Stop Restart	Export Logs		
ሌ ፲ *					
Ready				Connection established #	

Figure 14. AirX Control startup interface

Here you can see the server control pane and resource tree.

Control commands are located in the main menu of the window:

- Save is for saving the configuration of the Server;

Subset **Edit**:

- Clear full cleanup of configuration. Allows you to remove at once all connected sources, channels and output signals from the configuration. After pressing the Save button, configuration restore is not possible.
- **Undo** cancel the last change in stack of changes;
- Redo revert the change, canceled by Undo button;
- **Delete** removal of parameter (source, channel or output signal) from configuration.

Subset **AirX service**:

- **Start** start the Server;
- Stop stop the Server;



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 Restart - restart the Server. The server must be restarted after making changes and saving them (do not forget!). This is necessary because all changes are registered in the configuration files and applied in the configuration.

Subset Logs:

- **Export** - start the built-in application to export server log archive.

You will see the basic settings of the broadcast playout server in the right pane of the AirX Control window after you click the top item of the resource tree (in our case **AirX server**).

🖙 AirX	Control	-	. 🗆	×
Configu	uration			About
Save	Clear Undo Redo Delete Edit	Start Stop Restart Export		
	irX server	V AirX server		
ራ 51 %	User accounts License info Assigned lives External devices (plugins for Playout channels	Server info: Host DESKTOP-RDQ12F0 Name AirX server Description Location		
		2 Administrator account: Request administrator login and password when launching the application Login: Admin Edit account		
		Folders: Configuration: C:\ProgramData\SIA TELESTRIDER\AirX\ Log: C:\ProgramData\SIA TELESTRIDER\AirX Log\		
		Start delay: Delay application of server configuration and spawn of child process for preset number of seconds during start of the system.	ses	
		✓ NTP Service		
		NTP Servers: NTP Server 0.ru.pool.ntp.org 1.ru.pool.ntp.org 2.ru.pool.ntp.org 0.se.pool.ntp.org 1.se.pool.ntp.org 1.se.pool.ntp.org	ice	
		♥ Web Service		
		6 Web server port: 8000 Start Service Stop Serv	ice	
Ready		NUM Connection estab	lished	

Figure 15. AirX server settings

Settings are divided by groups:

 Server info - setup of general parameters of the server. Host - non-editable ID of the server, that is used in a systems with several AirX servers. It is equal to Windows-System-Computer name. Name is editable field to enter the name of the server. Description and Location are additional info fields (editable).



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 Administrator account - setup of registry record for administrator. Checkbox "Request administrator login and password when launching the application" is intended for setup of authorization of admin during launch of the server. By default login is "Admin" with password "12345".

The "Edit account" button is dedicated to call the interface for editing the registry entry of the user whose login is entered in the "Login" field.

Please note. AirX server does not presume registry record for Administrator. User of the PC with installed AirX server and rights to operate with the channel, which has been setup in "User account", is considered to be an Admin.

3. **Folders** - setup of the folders of the Server.

Editable text field **Configuration** contains the path to the configuration file that stores information about all server settings (inputs, devices, channels, output signals, etc.). Value for Configuration field can be entered from the keyboard. The default path is C:\ProgramData\SIA TELESTRIDER\AirX\

Log folder contains log files of the server and also all service information for technical support. Log folder can be selected using a standard Windows file manager. The default path is C:\ProgramData\SIA TELESTRIDER\AirX Log\

- 4. **Start delay** delay of starting the broadcasting service and its secondary processes after launch of the server (for example after the start of the operating system when the server is rebooted). Delay is being set in counter (in seconds). Value of the delay is being set empirically and depends on PC's hardware and system full load.
- 5. **NTP Service** setup of synchronization of the broadcast playout server and the client application time with the NTP server. By default, AirX is synchronized with system time of the server.

It is recommended to use local NTP server, connected to GPS satellite systems. When changing the NTP list, you have to restart the service with the Restart or Stop -> Start button.

6. **Web Service** – setup of the port of HTTP server and control of its work. In addition, it provides a possibility for start and stop of Web server/service.

Save and import configuration

The entire AirX server configuration, channel settings, parameters of connected external devices, sources, and outputs, are stored in Config.xml configuration file. By default, the file is located in C:\ProgramData\SIA TELESTRIDER\AirX\Config.xml (group 3 Figure 15. AirX server settings).

If you want to back up your configuration, you can save a copy of the Config.xml file to an external drive.

Any changes you make to the server configuration using the AirX Control program must be saved from the interface of this program using the **Save** button or by rightclicking on the configuration name and selecting **Save configuration** item from menu.

TELE STRIDER	info@telestrider.com www.telestrider.com		-39, Daugavpils, LV-5422, Latvia 41-5364
AirX Control Configuration Save	ndo Redo Delete Start	Stop Restart Expo	
 ✓ I AirX server ≫ ♣ User accou License inf Assigned li % External de Playout 	Redo Clear configuration	AirX server erver info: Host Name Description Location dministrator account:	DESKTOP-RDQ12F0 AirX server or login and password wh Admin

Figure 16. Save configuration

ATTENTION! Manual modification of the Config.xml file is **strictly prohibited** due to the risk of configuration corruption by human error. This may cause the incorrect work of software.

The previously saved configuration can be imported to AirX. Terminate all services with the **Stop** button, and then call the context menu by right-clicking on the configuration name.

AirX Control Configuration	_		
Save Clear Ur	ndo Redo Delete Start	Stop Restart Expo	
 ✓ I AirX server ➢ ♣ User accou ➢ License inf ☑ Assigned li ※ External de ☑ Playout 	Redo Redo Redo Clear configuration	AirX server erver info: Host Name Description Location	DESKTOP-RDQ12F0 AirX server
	 ☐ Stop service ▷ Restart service 	dministrator account: Request administrato Login:	or login and password wh Admin

Figure 17. Import configuration



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After selecting the **Import configuration** menu item, the standard Windows file manager will be opened. Find the previously saved configuration (Config.xml file) and import it to AirX.

System logs

System logs store all information about AirX server events and configuration changes, as well as user actions. By default, log files are stored in the C:\ProgramData\SIA TELESTRIDER\AirX Log folder. To collect an archive with all log files, use the **Export** button in the main menu of AirX Control app:

R AirX Control	– 🗆 🗙 About
Save Clear Undo Redo Delete Star	
🛇 🖵 AirX server	
۶ At User accounts	🗉 LOG export 🗙
 	Export path: D:\Log_archives
🕅 Playout channels	Select day for export log Select day for export log Select date range for export log I5.11.2022 I5.11.2022
	Export all log
	Export

Figure 18. LOG export

Specify the path in **LOG export** window to save the archive, using standard Windows file manager. You can also select a period for downloading logs: the current day, a date range. Or you can export of all logs available on the server for all the time. Set the value and click **Export** to save the archive in the specified folder.

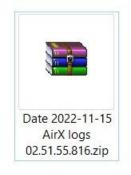


Figure 19. Log archive



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Users

User account interface

AirX software allows you to create independent user profiles. This function allows differentiating the user's permissions to playout channels. Each user's profile has access to the assigned channels.

To create a new user's profile, click the **User Accounts** branch of the Server resource tree on the left pane of the application window. Right pane **Add a new user account** is intended for creation of the record in user's registry.

Enter the name, password with confirmation, and click the **Add new user** button. Login and password must contain between 4 and 16 characters. The new profile will be added in the User accounts branch.

🖼 AirX Control				×
Configuration				About
Save Clear Undo Redo Delete St Edit	art Stop Restart	Export Logs		
❤ I⊒ AirX server	🛛 Add a new user			
❤ 楙 User accounts				
A Operator_1	User name:			
🔎 License info	Password:			
₽ Assigned lives	Confirm			
器 External devices (plugins for II) Playout channels		From 4 to 16	Add new user	

Figure 20. Add new user

You can always edit user data using the context menu. Select a username in User accounts branch with right-click and select **Edit** from the drop-down context menu.

AirX Control Configuration					- 🗆	× About
Save Clear Undo Redo	Delete	Restart Export	t			
 ♥ I AirX server ♥ ♣ User accounts 	Ec	dit user account			×	
License info 🛛 🖵 🗠	Remove	User name: Password: Confirm	Operator_1			
🛱 Playout channels			From 4 to 16	OK Cance		

Figure 21. Edit user account



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Set up the user permissions

The assignment of user permissions must be set after the creation of the playout channel. The **Users** branch of the Channel settings is intended to provide users permissions of various actions with channels.

Save Clear Undo Redo Delete Star	rt Stop Restart Export	
♥ 🖵 AirX server	♥ User permission settings	
◇ 枠 User accounts	✓ Operator_1	
A Operator_1	Allow channel authorization	 Image: A start of the start of
License info	OnAir control	
Assigned lives	OnAir editor	×
₩ External devices (plugins for	Schedule editor Scene editor	~
♥ Playout channels	Spectator	~
V V IN New channel		
ゆ Users		
Channel redundancy (1 + 1		
T Media folders and content		
Channel TAGs and EPG		
단 Channel live inputs		
📟 External Device Inputs		
📟 External Device Outputs		
E Outputs		

Figure 22. User permission settings

The **User permission settings** pane (right-side of the app window) contains the logins of user accounts, created in the User accounts settings. For each user there are the following checkboxes:

- Allow channel authorization general access to the channel
- OnAir control air control (start broadcasting or forced changing of playback position)
- OnAir editor access to editing the on-air schedule
- Schedule editor access to editing the saved schedule
- Scene editor access to editing scenes
- Spectator spectator mode, any actions are prohibited.

It means that you can assign the permissions from a simple observer to a superadministrator.

Click **Save** to save changes, then **Restart** to restart the AirX server after setup is finished.

Note: The AirX automation will start working with configured user profile only after **Authorization mode** is applied on the playout channel. The checkbox for enabling the authorization mode is located in the channel settings:



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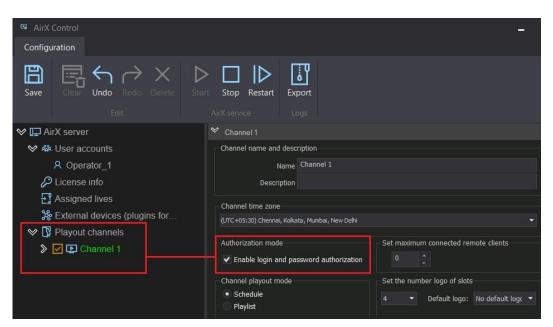


Figure 23. Authorization mode in channel settings

Configuring a Playout channel

To get started with AirX, you have to create a Playout channel first. There are three basic concepts in the AirX architecture:

- Live source or Input signal a signal received in real time using capture cards or network interface controllers. Every Live source can be included in the channel schedule as Live.
- Playout channel a program channel that is processing on the server.
 Playout channel may contain user-defined changes of the input signal like
 Upscale/Downscale, aspect ratio or fps. The Playout channel exists only
 within the broadcast playout server and is not a file or output stream.
- **Channel output stream** is the resulting stream with user-defined settings. One or more output streams can be added to each playout channel. Every output stream can have individual settings. This allows you to simultaneously broadcast several multi-format copies of the channel in different environments with own settings.

Channel schedule management and signal status monitoring are carried out in the remote **Channel Manager** user application.

Predicting GPU performance. Throughput optimization and resource allocation on GPUs

When AirX services are running, all Live sources, Playout channels, and Channel output streams use GPU resources.

AirX allows video encoding with CPU (Software renderer). But in most cases it has no purpose since the video adapter has a faster memory and a larger bus width. Therefore, when AirX increases the load of the GPU, it proportionally reduces the load



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of the CPU and processor memory usage. Especially it is important while working with channels in UHD or 8K: the stream of processed data would require enormous processing power. That is why we strongly recommend using the additional video adapters for broadcast playout servers.

For a preliminary calculation of the server configuration, you can follow the table:

	SD channel	HD channel	UHD channel
nVidia GeForce GTX 1060	2	1	-
nVidia GeForce RTX 3080	10	6	1
nVidia Quadro P2200	8	4	-
nVidia Quadro RTX A4000	12	8	1

Table 1. Predicting GPU performance

If you plan to work with a several channels, it would be reasonable to distribute the Playout channels over several video adapters.

Hardware resources have to be distributed equally, all Live sources associated to the Playout channel and Channel output streams have to be connected to the same video adapter in order to parallelize the streams and avoid data transfer between them. This way the load of memory and the CPU (due to copying processes) will be significantly reduced, and at the same time the GPU load will be also reduced.

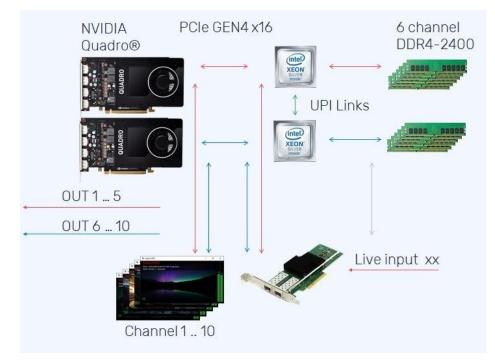


Figure 24. Resource Allocation Scheme

Check the **Allow Usage On Other Video Adapters** checkbox to allow using of multiple video adapters. Select your video adapter from the dropdown list as shown in the Figure below:



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201000						
Select video a	adapter:		NVIDIA G	eForce GTX 1060 6GB		-
🗸 Enable Ha	ardware Decod	ler		Allow Usage 🤇	On Other Vide	eo Adapters
Dynamic	SDR	*		·		Decode
Remote	NDI		9200			
		Available	when the	e device is not in use		Test
SCTE-35						
Select video ao Remote	Disabled	▼ Port:	9300	Force GTX 1060 6GB		Channe
Video						
Video Encoder:						
	adapter:			Compatible		
Encoder: Select video	adapter:			Compatible H.264 4:2:0		•
Encoder: Select video NVIDIA GeF	orce MX130 orce GTX 1060 6	And the second se		H.264 4:2:0		•
Encoder: Select video NVIDIA GeF NVIDIA GeFo NVIDIA GeFo	orce MX130 prce GTX 1060 6 prce GTX 1060 6	And the second se		H.264 4:2:0 Profile:	Level:	
Encoder: Select video NVIDIA GeF	orce MX130 prce GTX 1060 6 prce GTX 1060 6	GB #1	coder	H.264 4:2:0 Profile: Auto	Level: • Auto	•

Figure 25. Selecting of multiple video adapters

If you have only one video adapter, all Playout channels, Live sources and Channel output streams work within the same GPU and all operations are executed within the memory of one GPU. Than you do not have to check the **Allow Usage On Other Video Adapters** box.

Playout channel addition and setup

Click on **Playout channels** to create a Playout channel and select **Add channel** from the context menu:

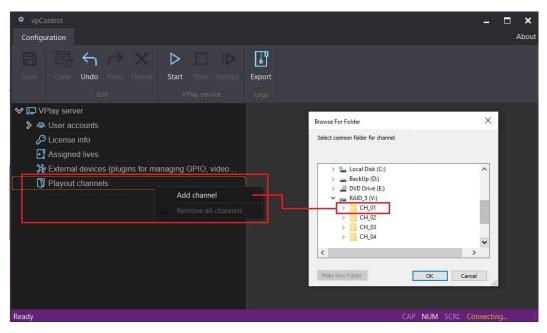


Figure 26. Add channel

Select a folder if it has already been created, or create it using **Create Folder**.



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Note: The channel folder must not be located on the system drive. We recommend to use a disk with RAID.

After creating a Playout channel, a settings section will be shown in the right pane of the AirX Control window:

AirX Control	- 1	□ ×
		About
$ \begin{array}{c c} \blacksquare \\ Save \\ \hline \\ Clear \\ Undo \\ Redo \\ Delete \\ \hline \\ Start \\ Start \\ Stop \\ Restart \\ \hline \\ Start \\ Stop \\ Restart \\ \hline \\ \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	Export	
Edit AirX service		
♥ I⊒ AirX server	♥ Channel 1	
S At User accounts	Channel name and description	
	Name Channel 1 Description	
External devices (plugins for managing GPIO, video		
🛇 🕼 Playout channels	Channel time zone (UTC+05:30) Chennal, Kokata, Mumbal, New Delhi	
Image: Second	Authorization mode Set maximum connected remote clients	
2	Enable login and password authorization	
	Channel playout mode Set the number logo of slots	
3	Schedule A Playlist	4
	Select video adapter: Intel(R) UHD Graphics 620	1
5		
	Remote Disabled Port: 9200 Use File Timecode	
	Channel format	1 -
6	HD (1080p) 1920x1080, 24 frames SDR Scale High Quality	
	Use Fill+Key Live Inputs	
	Audio Stream 7.1 (8 channels V Lang: Stream Disabled V Lang:	
	Stream Disabled Lang: Stream Disabled Lang:	
7	Stream Disabled Lang: Stream Disabled Lang: Lang:	
	Stream Disabled Lang: Stream Disabled Lang: Lang: Enable Loudness Normalization by Default Normalization EBU R128	
	MXF files audio map settings	
	Subtitles Hard Subtitles	1
	Stream Disabled Lang: File SRT	
	Stream Disabled V Lang:	
8	Stream Disabled 💌 Lang:	
	Stream Disabled Lang:	
	Stream Disabled Lang: Edit text style Edit text style Lang:	
	Stream Disabled Lang: Warning! Text style changes apply after restart channel!	
		<u> </u>
	♥ Channel folders The root folder of the channel	
•	D:\AirX_Channel_1	
3	Log folder	
	C:\ProgramData\SIA TELESTRIDER\AirX Log\	
	✓ SCTE Events Generation	-
	Generate SCTE	1
10	SCTE Start	
10	Label stop the advertisement: SCTE Stop	
	Passthrough SCTE Events	
Ready	CAP NUM SCRL Connecting	al

Figure 27. Playout channel main settings

 Channel name and description. The section contains fields for the Name of the Playout channel (default value is "New channel") and for its description (optional). Fill in these fields and make sure that the correct time zone is selected.



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 Authorization mode. The checkbox, set in this section, activates user profiles that have been set in the User Accounts branch of the Server resource tree (left pane of the application window). This function allows differentiating the user's permissions to playout channels. By default, AirX system has a "super user" Admin with a password 12345.

Set maximum connected remote clients. Adjustable parameter, intended to set the number of remote client applications (workstations) that can be connected to the channel at the same time. Each remote client requires an additional license.

- Channel playout mode. The checkbox set in this section, activates one of the channel workflows: "Schedule" - according to a dated on-air schedule or "Playlist" - according to a looped playlist.
- 4. Set the number logo of slots. Adjustable parameter, intended to set the number of logo slots that can be used at Playout channel (up to 16 logo slots for each channel). This setting allows you to pre-install a unique logo in each slot (for example, a Primetime or Live logo) and to use these slots in the schedule for automatic logo switch.

Default logo. Select a value from the drop-down list to be set as the default logo. The selected logo will be active all the time. And it will always be displayed on the air, unless the schedule states otherwise - the absence of a logo or its switch. If you select the **No default logo** option, the channel logo will be displayed only if it is specified in the schedule. The rest of the time the channel will broadcast without a logo.

5. **Select Video Adapter.** In the drop-down list, you can select one of the available video adapters. In multi-channel mode, make sure you are using the GPU and not the CPU (Software renderer). Otherwise, you can overload the CPU as the number of channels increases.

In addition, this section (**Remote** drop-down list) activates NDI or SRT remote preview. Specify the data transfer port for preview.

The **Enable Hardware Decoder** checkbox activates hardware decoding of input signals (Live sources) and files, used in the channel schedule. This option can reduce the CPU load.

The **Use File Timecode** checkbox allows the Playout channel to use file's timecode in the schedule. The setting applies to .mxf files recorded by VCRs.

6. **Channel format.** Basic video settings. Here you can select the video encoding resolution of the Playout channel.

Standard Definition	High Definition (HD)	Ultra High Definition
(SD)		(UHD/4K)
SD PAL 4:3	HD (720p) 1280x720,	UHD (2160p)
720x576, 25 fps	23.98 fps	3840x2160, 25fps
SD PAL 16:9 (Wide)	HD (720p) 1280x720,	UHD (2160p)
720x576, 25 fps	24 fps	3840x2160, 50fps
SD PAL 4:3	HD (720p) 1280x720,	UHD (2160p)
720x576, 23,98 fps	50 fps	3840x2160, 30fps
SD PAL 4:3	HD (720p) 1280x720,	UHD (2160p)
720x576, 24 fps	59,94 fps	3840x2160, 60fps
SD PAL 16:9 (Wide)	HD (720p) 1280x720,	UHD (2160p)
		3840x2160, 23,98

Available resolutions:



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720x576, 23,98 fps	60 fps	fps
SD PAL 16:9 (Wide)	HD (1080i) 1920x1080,	UHD (2160p)
720x576, 24 fps	25 fps	3840x2160, 24 fps
SD NTSC 4:3	HD (1080i) 1920x1080,	
720x480, 29,97 fps	29,97 fps	
SD NTSC 16:9 (Wide)	HD (1080i) 1920x1080,	
720x480, 29,97 fps	30 fps	
SD NTSC 4:3	HD (1080p) 1920x1080,	
720x480, 23.98 fps	23,98 fps	
SD NTSC 4:3	HD (1080p) 1920x1080,	
720x480, 24 fps	24 fps	
SD NTSC 16:9 (Wide)	HD (1080p) 1920x1080,	
720x480, 23.98 fps	25 fps	
SD NTSC 16:9 (Wide)	HD (1080p) 1920x1080,	
720x480, 24 fps	29,97 fps	
	HD (1080p) 1920x1080,	
	30 fps	
	HD (1080p) 1920x1080,	
	50 fps	
	HD (1080p) 1920x1080,	
	60 fps	
,	· · · · · · · · · · · · · · · · · · ·	•

In Channel format section you can also select the color space - **SDR** or **HDR HLG**. The **Scale** parameter is available for the Software Renderer. The scaling mode can be set to High Quality for Simulcast (priority to encoding quality) or Speed for technical preview (priority to low CPU usage).

The **Use Fill+Key Live Inputs** checkbox activates the access to Live sources with an alpha channel for the channel's graphic design.

7. Audio. The sound settings - the number of Audio streams, sound channels and language. Audio streams must be activated one-by-one by changing the value from Disabled to one of the values in the drop-down list: 2.0 (stereo), 4.0 (4 channels), 5.1 (6 channels) or 7.1 (8 channels). The language code for each stream must be entered manually into the Lang box. For example, *eng* or *es*. The **Enable Loudness Normalization by Default** checkbox intended to enable the audio normalization mode. The Normalization drop-down list contains values EBUR 128 and ATSC A85, according to broadcast standards. This option requires an additional license.

The additional settings window **MXF files audio map settings** allows audio mapping (the audio matrix correction) for MXF files.

8. The **Subtitles** section is intended to set subtitle parameters. At the moment AirX allows simultaneous work with 8 subtitle streams. Each subtitle language stream requires an additional license for a channel. Subtitle streams must be activated one-by-one by changing the value from Disabled (subtitles are prohibited) to Enabled (subtitles are allowed). The language code for each subtitle track must be entered into the Lang box manually. For example, *eng* or *es*.



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The **Hard Subtitles** checkbox allows embedding ("burning") the subtitle track into the video. The **File** drop-down contains the subtitle file formats, available for the channel. Options: SRT, SRT+STL, SRT+TSB4, SRT+TTML. The **Edit text style button** opens new window for editing the subtitle text styles.

- 9. **Channel folders** here you can change the folder, contains the channel parameters (and service subfolders) that were selected automatically during channel's creation and assign a folder for the channel logs. Remember that the channel folder must not be located on the system drive!
- 10. The **SCTE Events Generation** section is intended to generate and passthrough SCTE markers. The "Generate SCTE" checkbox enables the generation of SCTE markers in the Channel output stream. The "Passthrough SCTE Events" checkbox allows duplication of input SCTE markers (from an external source as part of the Input signal) in Channel output stream. The "Label start the advertisement" and "Label stop the advertisement" text fields are intended to control the insertion of advertisements. Using SCTE's requires an additional license for each channel.

At the end of the Playout channel setup, click **Save** to save and apply the configuration. The initial press of the Save button when creating a channel will start the AirX services (visually, the channel name will change color from orange to green). When making further changes to the channel configuration, apply channel settings and restart services by pressing **Save -> Restart**.

Next to the name of the Playout channel in the Server resource tree (left pane of the application window) you can see a checkmark that means the channel is active. If you want to exclude a channel from the active configuration without deleting you can uncheck this mark. In this case the AirX service will not try to start the channel - it will be ignored until the checkbox is returned.

Channel settings, Channel resource tree

After the channel has been created and the initial settings have been applied (described in **Playout channel addition and setup**), it is necessary to configure the additional parameters of the playout channel. First expand the Channel resource tree:

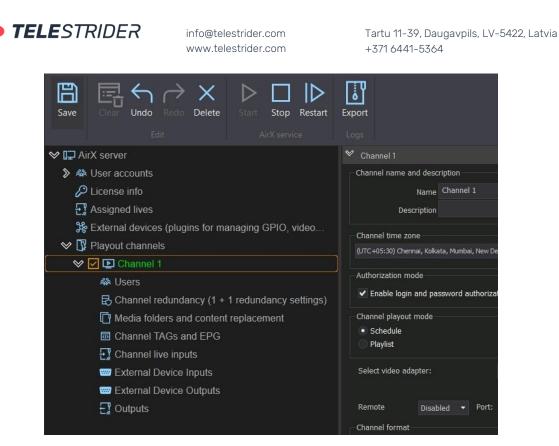


Figure 28. Channel resource tree

You have to configure all the parameters located in the branches of the Channel resource tree step-by-step. For each parameter see the explanations in the corresponding chapters.

Users

AirX software has the built-in security system that allows differentiating the user's permissions to playout channels (services) configured in the system. The **Users** branch of the Channel resource tree is intended to assign users access to various actions with channels.

The **User permission settings** pane (right-side of the app window) contains the logins of user accounts, created in the User accounts settings. For each user the meanings of checkboxes are the following:

- Allow channel authorization general access to the channel
- OnAir control air control (start broadcasting or forced switching of playback position)
- OnAir editor access to editing the air schedule
- Schedule editor access to editing the saved schedule
- Scene editor access to editing scenes
- Spectator spectator mode, any actions are prohibited.

It means that you can assign the permissions from a simple observer to a superadministrator.



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Save Clear Undo Redo Delete Star	t Stop Restart Export	
♥ 🖵 AirX server	❤ User permission settings	
❤ 縁 User accounts	▲ Operator_1	
A Operator_1	Allow channel authorization	~
License info	OnAir control	
Assigned lives	OnAir editor	✓
₩ External devices (plugins for	Schedule editor Scene editor	×
♥ Playout channels	Spectator	×
	opecator	
V IN New channel		
Part Users		
Channel redundancy (1 + 1		
Media folders and content		
Channel TAGs and EPG		
Channel live inputs		
www.external Device Inputs		
📟 External Device Outputs		
- Outputs		

Figure 29. User permission settings

Channel redundancy (1+1 redundancy settings)

AirX software has a built-in 1+1 redundancy, based on the independent synchronous work of two playout channels controlled from one client workstation. Redundancy mode requires the additional license for each channel.

The redundancy scheme includes two broadcast playout servers. Primarily they are only synchronized by the time parameter, using the Network Time Protocol (NTP server). The only thing that connects these two servers is a **setting** that shows to the client application that these two servers are working in pair.

In the AirX Launcher application, channels, added in redundancy mode, are named **A** and **B**. This **does not mean** that server A is the main one, and server B is the backup one! Servers and channels in 1+1 mode are completely equal and letters A and B are assigned randomly.

For the client application, the redundant servers are displayed as the single playout channel. But the broadcast is being made from two servers in every moment of time. When the servers are connected in such redundancy, synchronization point is a **client application** that sends commands to both servers at the same time

Schedules and files must be uploaded to both servers. All paths, files and schedules must be identical.

ATTENTION: For the correct work in the redundancy mode, the basic settings of servers and the settings of playout channels must be identical! Make sure the settings outlined 1, 2 and 3 are equal on both servers:



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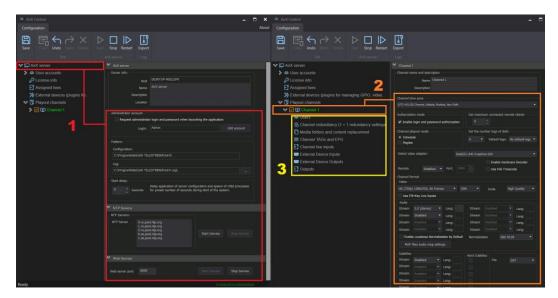


Figure 30. Settings, must be identical

The redundancy mode must be configured on two servers (or redundant channels) at the same time.

In the redundancy settings for both channels, set the checkbox to allow 1+1 mode: **Allow channel use in redundancy scheme**. After setting the checkbox, click **Save** on both channels in the main menu of AirX Control app. The channel configuration will be updated only after saving at this step, or you will not see channels ready for redundancy at the next step.

Configuration	
Save Undo Redo Delete Start Stop Restart	Export Logs
 ♥ I AirX server ♥ ♣ User accounts Ջ Operator_1 	 Channel reservation settings Allow channel use in redundancy scheme
 ✓ License info ✓ Assigned lives ※ External devices (plugins for managing GPIO, video ✓ ☑ Playout channels 	Redundancy settings Host: DESKTOP-RDQ12F0 Channel: New channel 2
 ✓ ☑ New channel< 織 Users 民 Channel redundancy (1 + 1 redundancy settings) 	
Image: Provide a content of the state	
 External Device Inputs External Device Outputs Evaluation Outputs 	

Figure 31. 1+1 redundancy settings, step 1



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Next, launch the pop-up window **Channel Redundancy** by clicking the **Configure** button and then click **Search** to search for available servers.

Then select the server to set the redundancy from the drop-down list:

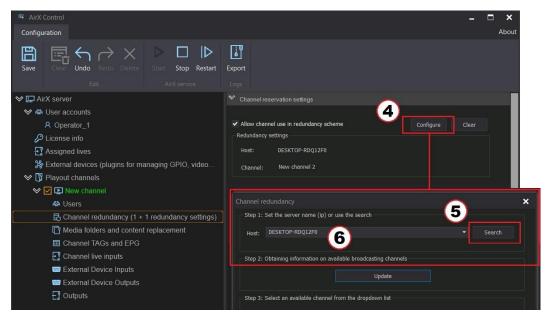


Figure 32. 1+1 redundancy settings, step 2

Click **Update** to get an up-to-date list of channels ready for redundancy on the selected server,

Next select the channel for redundancy in the **Channel** drop-down list. Save changes by clicking OK.

♥ I⊒ AirX server	✤ Channel reservation settings
♥ ♣ User accounts	
A Operator_1	✓ Allow channel use in redundancy scheme Configure Clear
🔑 License info	Redundancy settings
🕁 Assigned lives	Host: DESKTOP-RDQ12F0
Sector External devices (plugins for managing GPIO, video	Channel: New channel 2
🛇 🕼 Playout channels	
🛇 🔽 💽 New channel	
All Users	
Channel redundancy (1 + 1 redundancy settings)	Step 1: Set the server name (ip) or use the search
Media folders and content replacement	Host: DESKTOP-RDQ12F0
Channel TAGs and EPG	
단ઢ Channel live inputs	Step 2: Obtaining information valiable broadcasting channels
📟 External Device Inputs	Update
External Device Outputs	opuace
🔁 Outputs	Step 3: Select an available channel from the dropdown list
	Channel: (Available) New channel 2
	Channel: (Available) New channel 2
	OK Cancel

Figure 33. 1+1 redundancy settings, step 3

If you see a warning window on the screen, you have to check whether the redundancy is configured on the second server and whether the changes have been saved. Go through the steps 1-7 again. Then select the channel. Save changes with the OK button.



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Figure 34. Warning window

Pass through the same steps for the partner channel on the second server. You have to select server 1 for server 2 in the settings and server 2 for server 1 respectively.

On both channels, you have to save the changes and restart the AirX service by pressing **Save - Restart** in the main menu of AirX Control app. Now you can start working in redundancy mode.

Media folders and content replacement

This branch of the Server resource tree is intended for work with media folders, files of content and automatic replacement of schedule elements.

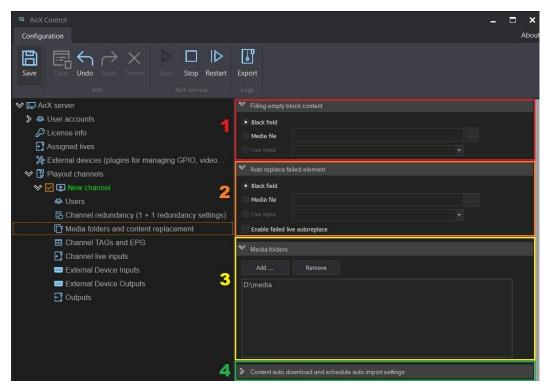


Figure 35. Media folders and content replacement

- The Filling the empty block content pane includes different options for the "Empty Block" (Dummy Clip) schedule element auto-replacement. If AirX broadcast automation reaches the row containing the Empty Block during the execution of the OnAir schedule, it will follow the settings and show:
 - Black field if **Black field** is selected. This is the default value for auto-replacement.
 - A checked Media file checkbox will replace empty blocks with the media file, such as the splash screen.



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- The Live input checkbox will replace the empty block with the Live source (Input signal) connected to the channel (see the Channel live inputs chapter for details).
- The Auto replace failed element pane is intended for automatic replacement of damaged schedule elements. Replacement options are similar to the previous pane:
 - Black field auto-replace an element with a black screen
 - **Media file** auto-replace an element with a media file
 - Live input auto-replace an element with Live source

By default, all of the auto-replacement options are applied only to corrupted video files in the schedule. However, in the same pane there is a checkbox **Enable failed live autoreplace**. When activated, all the options will also be applied to the damaged Live source.

The Media folders pane is intended to specify the media storage for the channel

 directories and folders where content is stored are usually sorted thematically,
 i.e. movie folder, music folder, science fiction folder, etc.

This pane allows you to quickly add and remove media folders, available for the channel.

The list of folders updates in Channel Manager client application after saving the configuration with the **Save** button, without restarting the server (you do not need to click Restart!). For a list of supported containers and codecs, see the **Table of codecs** chapter.

- 4. The **Content auto download and schedule auto import settings** pane contains:
 - settings for schedules and media files auto import,
 - settings for interacting with external broadcast traffic management systems
 - settings for interacting with the AirXMedia service for automatically downloading content from external storage systems to AirX.

Content auto download and schedule auto import settings

AirX, as a broadcast automation system, can be integrated into the infrastructure, customer already have.

The AirX software has features for automatically importing schedules and media files from external storage systems with AirXMedia service and interacting with external broadcast traffic management systems.

All necessary settings are located in the **Content auto download and schedule auto import settings** pane of the **Media folders and content replacement** branch of the Server resource tree. For every single playout channel, auto import settings must be configured individually!

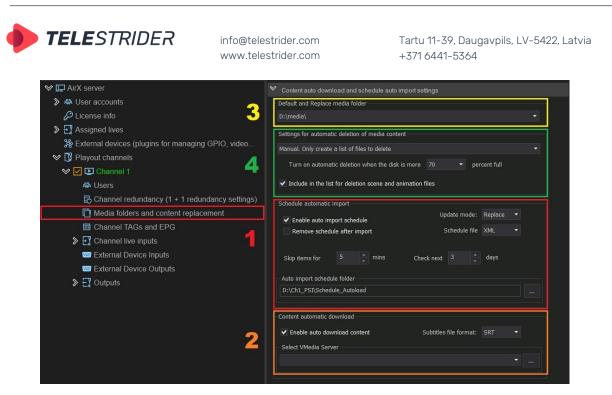


Figure 36. Content auto download and schedule auto import settings

The Settings pane contains the following sections:

 Schedule automatic import. The section is intended for configuring auto loading of schedules and integration with external broadcast traffic management systems. The section fields are active when **Enable auto import schedule** checkbox is checked.

🗸 Enable auto in	nport schedule	Update mode:	Replace	~
Remove scheo	lule after import	Schedule file	XML	
Skip items for uto import sched	5 📮 mins	Check next 3	days	
):\Ch1_PSI\Sche	dule_Autoload			

Figure 37. Schedule automatic import

- The main field is **Auto import schedule folder**. The field specifies an intermediate folder between AirX and an external traffic system. The broadcast schedule created by third-party software must be saved to this folder. At the same time the AirX service constantly checks the folder for updates. As soon as a new schedule is uploaded to the folder, AirX moves it to the Channel Manager's on-air schedule according to the settings.
- 2. **Check next ... days** adjustable parameter, intended to set the number of days AirX will search for a schedule in the Auto import schedule folder. The default value is 3. This means that when checking a folder, AirX will check for updated schedules for the current day and two days ahead.
- 3. **Schedule file** a drop-down list to select the extension of the schedule file. Available file extensions are XML, XLS, CSV. The default extension is XML.
- 4. **Update mode** the mode of a schedule update:



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The **Replace** mode means that when a new schedule is uploaded into the autoload folder, the AirX service moves it into the Channel Manager, replacing the existing on-air schedule. The old schedule will be deleted. **Append** mode means that the new schedule will not replace the current on-air schedule, but it will be added to the Channel Manager after the current one, below the last row. The old schedule will not be deleted: all positions already available in the Channel Manager will remain in their places. By default, Update mode is set to **Replace**. Append mode have to be used with caution as it is intended for highly specialized tasks.

- 5. **Remove schedule after import** a checkbox to automatically remove the schedule from the autoload folder after it is loaded into the Channel Manager.
- 6. Skip items for ... mins adjustable parameter. As described above, when a new schedule is uploaded into the autoload folder, the AirX service moves it into the Channel Manager, replacing the existing on-air schedule. The Skip items... parameter shows how many minutes of the current (already-playing) on-air schedule will be guaranteed to broadcast before switching to a new schedule. The default value is 5 minutes. This setting allows quickly editing of the old schedule and smooth transition to the updated schedule.
- 2. **Content automatic download**. The section is intended for integration with the AirX Media service.

AirX Media is a content management system that works with AirX Playout Broadcast Automation servers to automate the retrieval of schedules/playlists, content, media and CG.

The system allows the operator to manage local content on AirX Playout Broadcast Automation servers and automates the retrieval of content from external storage systems to the internal storage of a broadcast playout server, hence making it readily available for playout.

AirX Media requires the additional license.

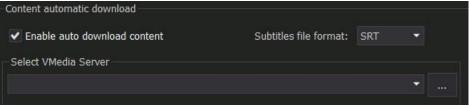


Figure 38. Content automatic download

The **Enable auto download content** checkbox activates the fields:

Select AirX Media Server is a drop-down list containing all AirX Media servers located on the current subnet.

Subtitle file format – a drop-down list containing available subtitle file extensions. The default extension is SRT.

3. **Default and Replace media folder**. The section can be activated by the **Enable auto import schedule** checkbox (see section 1 of the current pane) or by the **Enable auto download content** checkbox (see section 2 of the current pane).

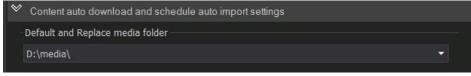


Figure 39. Default and Replace media folder



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When AirX schedules autoload function is enabled the service can get a schedule from an external broadcast traffic management system. Any schedule has a required **Path field** inside: the path to the local media folder. In this folder AirX automation have to find every single media file, to avoid errors in the Channel Manager app.

The **Default and Replace media folder** setting allows you to specify an alternative media folder. AirX will check an alternative folder in case media file is not found in the main folder specified in the schedule Path field.

 Settings for automatic deletion of media content are intended for automatic deletion of media content from the broadcast playout server. It is activated by the Enable auto download content checkbox (see section 2 of the current pane).

Manual. Only create a list of files to delete				
Turn on automatic deletion when the disk is more	70	×.	percent full	
Include in the list for deletion scene and animation	files			

Figure 40. Settings for automatic deletion of media content

Available automatic deletion options (drop-down list):

- Disabled (default value) automatic deletion of media content from the broadcast playout server is disabled.
- Manual. Only create a list of files to delete the media content deletion service is in manual mode. AirX only creates a list of files that can be manually deleted. This list includes media files that are stored in the server's local storage but have not been used in the schedule for a long time.
- Auto/Delete unused files automatically the media content deletion service is in automatic mode. Unused files will be deleted automatically, without any user's actions.

Turn on automatic deletion when the disk is more ... percent full - dropdown list, which allows you to set the filling limit of the server's internal storage (in percent). Upon reaching this limit the automatic deletion of media content will start.

The **Include in the list for deletion scene and animation files** checkbox is intended for automatic deletion of CG and animation files.

Channel TAGs and EPG

In this branch of the Channel resource tree you can work with content description metadata tags (meta descriptions) and EPG data fields.

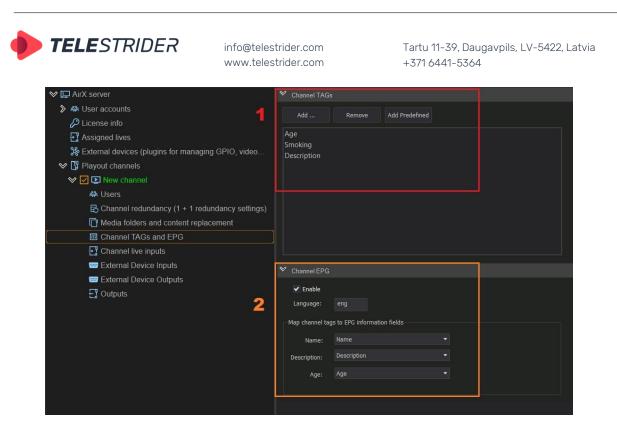


Figure 41. Channel TAGs and Channel EPG

1. **Channel tags**. When adding a TAG to the AirX Control, this tag is also embedded as an active section (column) in the **Channel Manager** client app. This way the tag can be used in the CG.

A simple example is the **Age** tag for TV Parental Guidelines. By default, AirX does not use this tag and there is no column in the schedule where you can specify the age rating value for a particular media file.

In the **Channel TAGs** pane, click **Add** and enter a name for the Age tag. Save your changes. After saving, the Channel Manager schedule will be automatically changed and a new active column **Age** will be added. You can modify any value in this column or import the entire schedule with the metadata of TV Parental Guidelines for media files.

	Die Calendula					
irX Channel [New channel] OnA						
		[[⁴] Sca	ile Name	Age	Smoking	Source
	1	[,1]	ALIVE Canada 4K_1.mp4			D:\media\HD_
	1	C(3)	2178.mp4	6+		D:\media\217
	2	0] 19746.mp4	12+	Alert	D:\media\197
1	1	C)3 📃	19772.mp4	6+		D:\media\197
	1	[;]	2239.mp4	0+		D:\media\223
			Chai	nnel	TAC	ĪS .

Figure 42. Channel TAGs in the Channel Manager app

 Channel EPG pane is intended for generating EPG data fields. The section fields are active when Enable checkbox is checked. Set the language value into the Language field manually (for example, eng or es). Channel EPG settings allow to



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generate EPG fields for each media file in the schedule with the following parameters:

- **Name** the name of the media file
- **Description** description of the media file (annotation)
- **Age** TV Parental Guidelines rating.

When generating the EPG, the values of these parameters are taken from the metadata of the video files, located in the corresponding schedule columns in the Channel Manager app. The **Name** column is the default field and requires no further action. The **Description** and **Age** columns are adjustable and are not included in the schedule by default. First you have to add the **Description** and **Age** tags in the **Channel TAGs** section to use the EPG generation functionality.

Channel live inputs

The connection of Live sources (or Input signals) to AirX is two-step connection:

- 1. The Live sources must be connected to the server
- 2. Sources, connected to the server, must be distributed over playout channels.

NOTE: Each of the sources connected to the server can be added to any of the playout channels and/or to several channels at once.

Several sources can be connected to each playout channel at the same time.

Live sources do not require additional licenses – you can add as many sources to any playout channel as you need.

DVB/ATSC UDP IP source

First step: you have to select an IP of your LAN card in the context menu of the Assigned Lives branch of the Server resource tree (left pane of the application window).

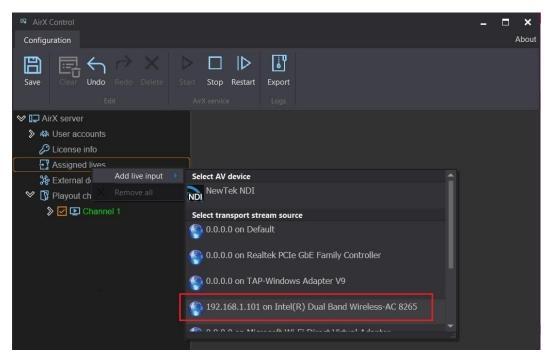


Figure 43. Add DVB/ATSC UDP IP Live input step 1



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Next, using the context menu of the newly added LAN card, enter the IP address and port of the input stream into the pop-up window (for example, 235.1.3.1 and 1234).

	Control				×
Configu	uration				About
Save	Clear Undo Redo Delete	Start Stop Restart	Export Logs		
🛇 🖵 Ai	irX server				
> #	User accounts				
G	License info		Add new IP stream	3	<
_ ~ ₽	Assigned lives		Multicast\Unicast IP		
	External devices (plugins for	Add source	235 . 1 . 3 . 1 Port: 1234 👻		
	Playout channels		Source IP (optional) Enable use of source IP		
			ОК С	ancel	

Figure 44. Add DVB/ATSC UDP IP Live input step 2

The last step: select the streams you need. Click on the IP address of the Live source and select Search in the context menu - you will receive a list of all streams coming from that address.

AirX Control Configuration		× About
Save Clear Undo Redo Delete Star	rt Stop Restart Export AirX service Logs	
♥ I⊒ AirX server	Sec News	
> ♣ User accounts	Name/Description	
🔑 License info	Name BBC NEWS	
	Description AKADO	
	Select video adapter: NVIDIA GeForce MX130 Finable Hardware Decoder Allow Usige On Other Video Adapters	
	Dynamic SDR V	
Fashion TV Science 2.0	Remote Disabled V Port: 9200	
AllMovie Channel	Available when the device is not in use Test	
 Cean TV Channel 	SCTE-35 Read SCTE-35	
器 External devices (plugins for… II Playout channels	Label start the advertisement: Start SCTE-35 New channel 1 Label stop the advertisement: Stop SCTE-35 New channel 1	

Figure 45. Add DVB/ATSC UDP IP Live input step 3

Check the required streams and click **Save**. This action will add the streams to the configuration and their names will visually change color to green.

It is really important to choose a video adapter for decoding - this significantly speeds up the decoding process and offloads the CPU (outlined in blue).



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The right pane of Input stream settings is intended to configure the parameters of the input stream decoding:

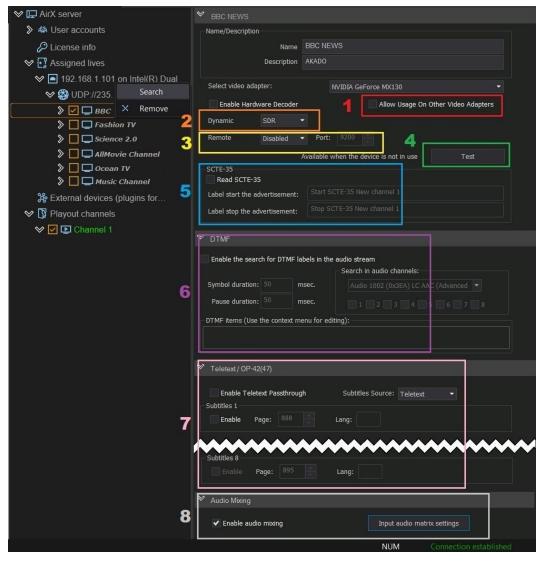


Figure 46. The parameters of the DVB/ATSC UDP IP input stream decoding

- 1. Allow Usage On Other Video Adapters for usage of multiple video adapters
- 2. Dynamic SDR/HDR HLG for color space selection
- 3. **Remote Disabled/NDI/SRT** enable remote preview in NDI or SRT. The preview port must also be set here.
- 4. **Test** for visual control of the incoming stream (see the **Channel live inputs** chapter for details)
- 5. SCTE-35 for SCTE-35 markers detection in the input stream. This setting is necessary for automatic AD Insertion mode. The "Label start the advertisement" field requires the name of the start insertion marker. The "Label stop the advertisement" field requires the name of stop insertion marker.
- 6. **DTMF** for DTMF signals detection in the input audio stream. DTMF settings:
 - Enable the search for DTMF labels in the audio stream enables the DTMF monitoring mode. After checking the box, the remaining fields of the section will become available.
 - Symbol duration to set the duration of the DTMF keys (0-9, #, *, A, B, C, and D)



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- *Pause duration* to set the duration of the pause between keys
- Search in audio channels with numbers from 1 to 8, to specify the audio stream in which the DTMFs will be searched
- *DTMF items* field intended for entering the DTMF search mask (value and order of keys in the DTMF, for example #ABC).

Operation with DTMF and SCTE-35/104 requires the additional license.

- 7. Teletext / OP-24(47) allows the recognition of teletext and closed captions in the input stream (up to 8 tracks in each input stream). The Subtitles Source drop-down menu contains the subtitle formats (Teletext, Closed captions or EBU-TT), the Subtitle 1 Enable checkbox allows the decoding of the first subtitle track (the same are checkboxes 2-8). The Page field is editable, intended to specify the page number with teletext data. For each subtitle track, it is possible to specify a language in the Lang field. The language must be specified in a standard format manually (for example, eng or es).
- 8. Audio Mixing additional window is intended for customization of input audio matrix

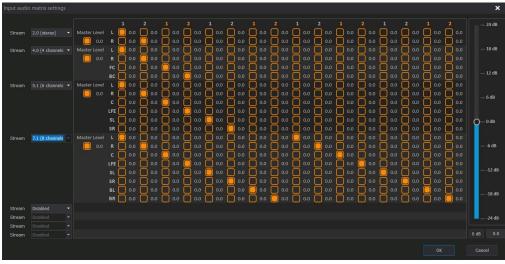


Figure 47. Input audio matrix settings

Note: Do not forget to save changes!

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to the playout channel.

NDI source

First step: call the context menu of the Assigned Lives branch of the Server resource tree (left pane of the application window). Select **Add live input** in the drop-down menu, and click the **NewTek NDI** input stream type.



Figure 48. Add NDI Live input step 1

After NDI is added to the Assigned lives list, you have to find the input stream. Click **Search sources** in the right pane of the app window. The new window **NDI sources scan** will be opened. Specify NDI group name in the text field and click **Start Search**. If the NDI source you are looking for does not have a group, it is enough to click Start Search to find all available sources without a group.

❤ I⊒ AirX server	♥ NewTek NDI		
≫ ♣ User accounts	Name/Description		
🔑 License info	Name	NewTek NDI	
	Description		
W NewTek NDI	Select video adapter:	Intel(R) UHD Graphics 62	
Playout channels	NewTek NDI source	Allow Usz	ige On Other Video Adapters
	Host	- Source	
L	Search sources	1	
	Video	Audio	
NDI sources scan		×	audio matrix settings
NDI Group: Testers		2	
Please hold! Searching for N	DI sources.		Test

Figure 49. NDI sources scan

When the search is completed, all available Hosts and streams will appear in the **Host** and **Source** fields (Figure 50, outlined in red). Select the stream you need from the drop-down list and click **Save** in the main menu of AirX Control app to save settings.

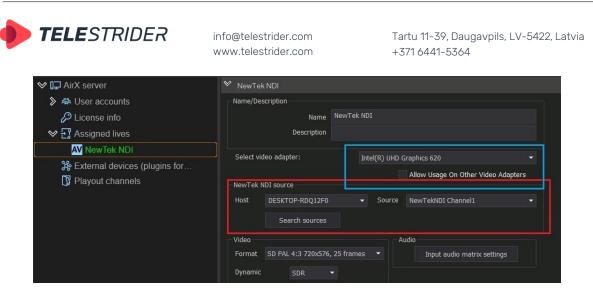


Figure 50. NDI Host and source selection

It is really important to choose a video adapter for decoding - this significantly speeds up the decoding process and offloads the CPU (outlined in blue).

In addition to selecting a decoder, the right-side settings pane is intended to configure the parameters of the input stream decoding:

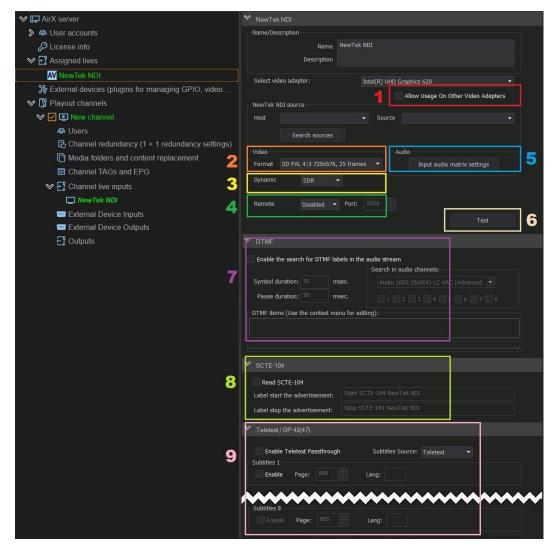


Figure 51. The parameters of the NDI input stream decoding

1. Allow Usage On Other Video Adapters for usage of multiple video adapters



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- Video -> Format for the video format of the input stream selection (see the complete list of formats in the Channel format. Basic video settings. Here you can select the video encoding resolution of the Playout channel.).
- 3. Dynamic SDR/HDR HLG for color space selection
- 4. **Remote Disabled/NDI/SRT** enable remote preview in NDI or SRT. The preview port must also be set here.
- 5. **Audio Mixing** additional window is intended for customization of input audio matrix

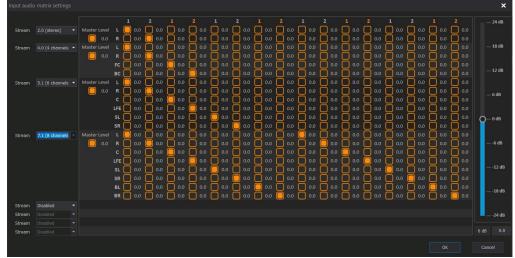


Figure 52. Input audio matrix settings

6. **Test** for visual control of the incoming stream (see the **Diagnostics tools** chapter for details)

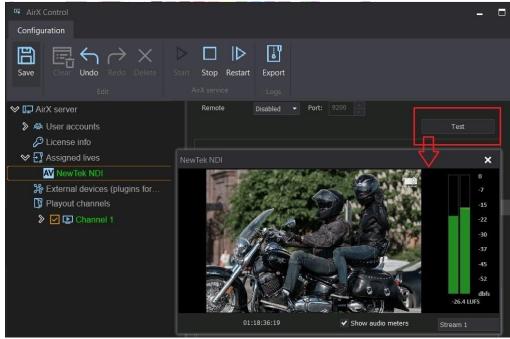


Figure 53. Input stream visual control

- 7. **DTMF** for DTMF signals detection in the input audio stream. DTMF settings:
 - Enable the search for DTMF labels in the audio stream enables the DTMF monitoring mode. After checking the box, the remaining fields of the section will become available.



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- Symbol duration to set the duration of the DTMF keys (0-9, #, *, A, B, C, and D)
- Pause duration to set the duration of the pause between keys
- *Search in audio channels* with numbers from 1 to 8, to specify the audio stream in which the DTMFs will be searched
- DTMF items field intended for entering the DTMF search mask (value and order of keys in the DTMF, for example #ABC).
- 8. **SCTE-104** for SCTE-104 markers detection in the input stream. This setting is necessary for automatic AD Insertion mode. The "Label start the advertisement" field requires the name of the start insertion marker. The "Label stop the advertisement" field requires the name of stop insertion marker.

Operation with DTMF and SCTE-104 requires the additional license.

9. Teletext / OP-24(47) allows the recognition of teletext and closed captions in the input stream (up to 8 tracks in each input stream). The Subtitles Source drop-down menu contains the subtitle formats (Teletext, Closed captions or EBU-TT), the Subtitle 1 - Enable checkbox allows the decoding of the first subtitle track (the same are checkboxes 2-8). The Page field is editable, intended to specify the page number with teletext data. For each subtitle track, it is possible to specify a language in the Lang field. The language must be specified in a standard format manually (for example, eng or es).

Note: Do not forget to save changes!

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to a playout channel.

SRT source

Secure Reliable Transport (SRT) is a data transfer protocol based on UDT (UDPbased Data Transfer Protocol). SRT uses a "handshake" mechanism of bidirectional data transfer; each device must be identified as either a Caller or a Listener.

A device in Caller mode is the initiator of an SRT streaming session. The Caller device must know the public IP address and port number of the device identified as the Listener. If the stream source device is set to Caller mode, the broadcast will not start until a point-to-point connection with the receiver set in Listener mode.

The device in Listener mode is waiting for a request to start an SRT streaming session. A device identified as a Listener has only to know that it must listen to an SRT stream on a specific port. If the stream source device is set to Listener mode, the receiver set in Caller mode sends a request to receive the stream. In this case, there can be several receiving points.

Briefly:

- Listener Source the receiver set in the Caller mode sends a request to receive the stream, there can be several receiving points.
- Caller Source Broadcasting will not start until a point-to-point connection with the receiver set in Listener mode.

SRT source setup

First step: call the context menu of the Assigned Lives branch of the Server resource tree (left pane of the application window). Select **Add live input** in the drop-down menu, and click the **SRT** input stream type.

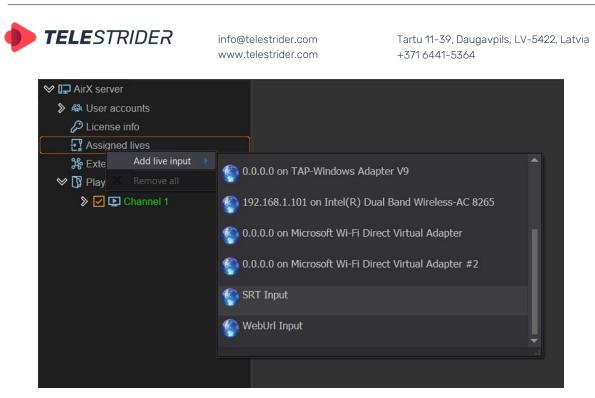


Figure 54. Add SRT Live input step 1

After SRT is added to the Assigned lives list, you have to set the input stream URL to the corresponding text field in the right side of the app window (1). Select the network mode (Caller / Listener) and, if the input stream is encrypted, select the encryption mode (AES-128 or AES-256) and enter the key (2). Finally, in the context menu of the SRT Input item (left side of the app window, Channel resource tree), click Search (3).

♥ I⊒ AirX server	Source URL
	Set input SRT URL
🔑 License info	srt://235.1.3.1:1234
Sector Assigned lives	Example: srt://0.0.0.0:9998
SRT Input Search	Encryption mode: None
♥ Playout channel. ★ Remove	Encryption pass:
» ⊡ Channel 1 3	Network mode: Listener 🔹 🥌

Figure 55. Add SRT Live input step 2

When the AirX service detects a stream, you will see a settings pane on the right side of the app window.

TELESTRIDER	info@telestrider.com Tartu 11-39, Daugavpils, LV-542 www.telestrider.com +371 6441-5364	2, Latvia
 AirX server AirX server User accounts License info T Assigned lives SRT Input 	✓ New channel 1 (Stream) Name/Description Name New channel 1 Description Stream	1
 ✓ ✓ □ New channel 1 (Stream □ Video 1001 (0x3E9) ↓ Audio 1002 (0x3EA) LC 		
 	Remote Disabled Port: 9200 Available when the device is not in use Test SCTE-35 Read SCTE-35 Label start the advertisement: Start SCTE-35 New channel 1 (Stream) Label stop the advertisement: Stop SCTE-35 New channel 1 (Stream)	
	DTMF Enable the search for DTMF labels in the audio stream Search in audio channels:	
	Symbol duration: 50 msec. Pause duration: 50 msec. 1 2 3 4 5 6 7 8 DTMF items (Use the context menu for editing):	

Figure 56. SRT Input stream settings

The detailed settings of the SRT input stream are identical to the UDP stream. Description of settings and screenshots are in the chapter **DVB/ATSC UDP IP** above.

Do not forget to select the video adapter for decoding the input stream (outlined in red). If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see **Predicting GPU performance. Throughput optimization and resource allocation on GPUs**).

Check the box next to the name of the input stream in the Assigned lives resource tree to add it to the configuration and click **Save**.

❤ I⊒ AirX server	♥ New channe	l 1 (Stream)		
S ♣ User accounts	Name/Description			
🔑 License info	Nan			
	Description			
🛇 🗖 SRT Input	Select video a	idanter:		
💙 🗹 🖵 New channel 1 (Stream				
Video 1001 (0x3E9)	Enable Hardware Decoder			
↓) Audio 1002 (0x3EA) LC	Dynamic	SDR		
₩ External devices (plugins for	Remote	Disabled		
🛇 🛐 Playout channels				
Channel 1	SCTE-35	-35		

Figure 57. Active SRT input stream in the Assigned lives resource tree



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The Input stream name will change color to green - the stream was added successfully.

You can use the Input stream preview to control the quality. See the **Diagnostics tools** chapter for details.

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to a playout channel.

SDI source

If you have an SDI capture card installed, add an SDI source to Assigned lives from the context menu in the same way as a UDP source. Select the required board and the required SDI input from the list of capture cards installed (supported SDI capture cards - DeckLink, AJA, Dektec, StreamLabs, Softlab-NSK).

G AirX Control Configuration	L C X About
Save Clear Undo Redo Delete Edit AirX service Logs	
 ♥ □ AirX server > ♣ User accounts ⊘ License info I Assigned lives 	
Select AV device Playout ch Remove all BMD® DeckLink Quad 2 0 Channel 1 BMD® DeckLink Quad 2 2 BMD® DeckLink Quad 2 2 BMD® DeckLink Quad 2 2 BMD® DeckLink Quad 2 2 BMD® DeckLink Quad 2 2 BMD® DeckLink Quad 2 3 BMD® DeckLink Quad 2 7	Î
NewTek NDI	, a

Figure 58. Add SDI Live input step 1

It is really important to set the initial settings and test them before (Figure 59, outlined in red).

TELESTRIDER	info@telestrider.com Tartu 11-39, Daugavpils, LV-5422, Lat www.telestrider.com +371 6441-5364
 ♥ I AirX server ▶ ♣ User accounts P License info ♥ Assigned lives M DeckLink Quad 2 1 	Image: Select video adapter: NVIDIA Quadro P5000
 ♥ Playout channels ♥ ☑ Channel 1 	Video Format HD (1080i) 1920x1080, 25 frames Dynamic range SDR Audio Input audio matrix settings
	Remote preview: Disabled Port: 9200 Available when the device is not in use -> Test
	Enable the search for DTMF labels in the audio stream Symbol duration: 50 msec. Pause duration: 50 msec. DTMF items (Use the context menu for editing):
	✓ SCTE-104

Figure 59. SDI Input initial settings

As with the inputs described above, the SDI settings pane has several settings sections:

- AV device Name
- Select video adapter choose a video adapter for decoding. Allow Usage On Other Video Adapters checkbox - share channel data between multiple video adapters
- Video and Audio to adjust input signal parameters
- Remote preview to set up remote preview
- Test is a visual diagnostic tool. It is live preview of input stream. See description in **Diagnostics tools** chapter.
- **DTMF** for DTMF signals detection in the input audio stream.
- SCTE-104 for SCTE-104 markers detection in the input stream in AD insertion mode
- Teletext (OP-42/47) / Closed Captions subtitle decoding settings

The detailed settings of the SDI input stream are identical to the UDP stream. Description of settings and screenshots see above in the chapter **DVB/ATSC UDP IP**

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to a playout channel.

WEB source

First step: call the context menu of the Assigned Lives branch of the Server resource tree (left pane of the application window). Select **Add live input** in the drop-down menu, and click the **WebUrl** input stream type.

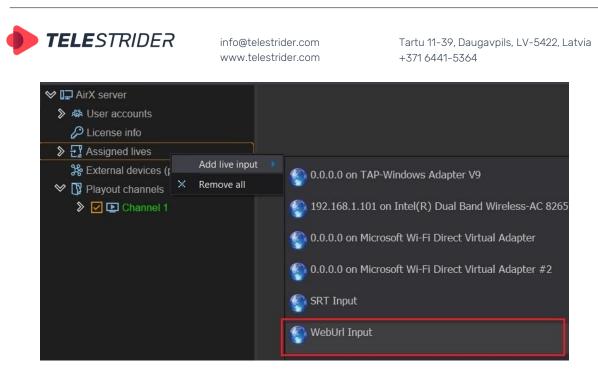


Figure 60. Add WebUrl Live input step 1

After WebUrl is added to the Assigned lives list, you have to set the input stream **URL** to the corresponding text field in the right side of the app window (Figure 61, outlined in red).

♥ I AirX server	♥ Web URL				
	Name/Descripti	on			
🔑 License info		Name	Web ur		
❤ 문 Assigned lives		Description			
Web url	Select video adapter: Intel(R) I			Intel(R) UHD Graphics 620	
 				Allow Usage	On Other Video Adapters
	URL https://30a-tv.com/music.m3u8				
	Dynamic	SDR •			
	Remote	Disabled 🔹	Port:		
		L.	vailable	when the device is not in use	Test

Figure 61. WebUrl settings

The detailed settings of the WebUrl input stream are identical to the UDP stream. See the description of settings and screenshots above in the chapter **DVB/ATSC UDP IP**

You can use the Input stream preview to control the quality. See the **Diagnostics tools** chapter for details.

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to a playout channel.

ST2110 source

First step: call the context menu of the Assigned Lives branch of the Server resource tree (left pane of the application window). Select **Add live input** in the drop-down menu, and click the **Rivermax IP (ST2110)** input stream type.

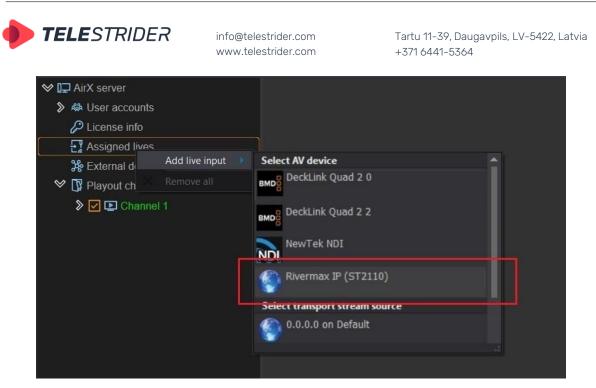


Figure 62. Add ST2110 Live input step 1

After ST2110 is added to the Assigned lives list, you will see the standard AV input settings pane on the right side of the app window.

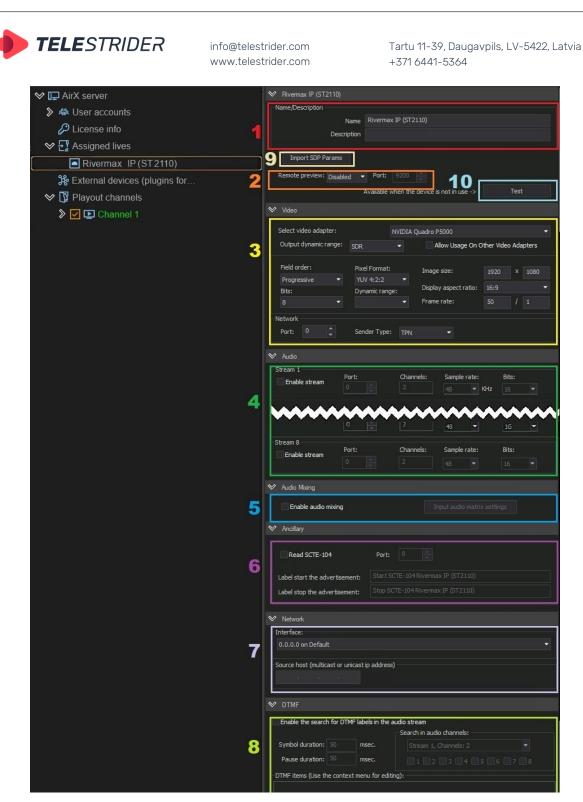


Figure 63. ST2110 settings

Like other types of sources, the ST2110 has its own settings. They are grouped in several panes:

- 1. **Rivermax IP (ST2110)** AV device name, Name and Description fields.
- 2. Remote preview remote preview enabling checkbox and port preview field
- 3. **Video** selection of a video adapter for decoding, color space, parameters of the input video, network settings (port for incoming video and TPN)
- 4. Audio parameters of the input audio.
- 5. Audio Mixing setting up the audio matrix



The panes above are standard, see the description in the chapter **DVB/ATSC UDP IP**

- 6. Ancillary additional service data. The section contains the "Enable SCTE-104 Events» checkbox which enables the SCTE-104 markers detection in the input stream in AD insertion mode. You can also specify the port for SCTE-104.
- 7. **Network** settings the drop-down list "Interface" is intended to select the interface and port for the input stream. The "Source Host" field is intended to input the source IP manually.
- 8. **DTMF** settings of DTMF signals detection in the input audio stream, see the **DVB/ATSC UDP IP source** chapter for a detailed description.
- Import SDP Params button is an important customization setting! The setting is intended for importing an SDP file with the input signal parameters. After importing the file, the parameters "Video", "Audio", "Ancillary" will be filled automatically.
- 10. **Test** button is a visual diagnostic tool. It is live preview of the input stream. See the description in **Diagnostics tools** chapter.

Fill the fields 7 - **Interface** and **Source Host** - to select a specific stream that is received by the Rivermax adapter card as a single source. Then click **Save** and test the incoming stream.

Follow the instructions in the **Live sources connection and distribution** chapter to add a Live source to a playout channel.

Diagnostics tools

It is necessary to test the quality of the incoming streams (Live sources) after adding them to the configuration. AirX has two built-in diagnostics tools: visual preview and fps/dropped frame control.

First use the **Test** button in the source settings pane for visual control and control of audio tracks: **ATTENTION:** The Test mode is only available when the device is turned off.



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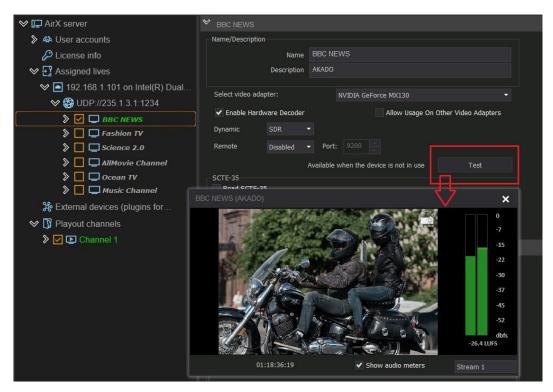


Figure 64. DVB/ATSC UDP IP Input diagnostics/visual control

Next step click on the name of the Input stream you want to check and call the context menu. Select **Preview** to enable fps/dropped frames control. A preview of the input stream will be opened in an additional window:

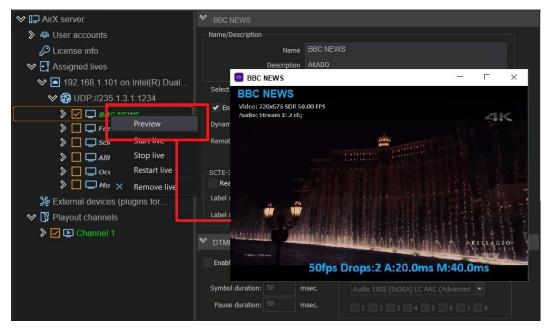


Figure 65. Input stream fps and dropped frames control

Press the keyboard shortcut **Ctrl+F7** to show the frame counter in the lower right corner of the screen. The counter will show the current stream status and the number of dropped frames. In the upper left corner of the preview window, you will see the characteristics of the input stream: Channel name, video format, color space,



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fps, and number of audio tracks. Preview display and input stream monitoring are performed in real time.

ATTENTION: The above diagnostic tools are available only for correctly connected, enabled input streams. They can be identified by the green highlighting of the source name in the Assigned lives resource tree. If the source name is highlighted in red, the input stream is corrupted or missing. In this case, source troubleshooting is required.

Live sources connection and distribution

This chapter describes the connection of Live sources to the Playout channel.

Adding Live sources (or Input signals) to AirX is two-step connection:

- 1. The Live sources must be connected to the server
- 2. Sources, connected to the server, must be distributed over playout channels.

Each of the sources connected to the server can be added to any of the playout channels and/or to several channels at once.

Several sources can be connected to each playout channel at the same time.

Live sources do not require additional licenses – you can add as many sources to any playout channel as you need.

After Live sources are connected to the AirX server and tested, you can distribute them over playout channels. You must add them to the **Channel live inputs** branch of the Channel resource tree (left pane of the application window). The following figure shows how to add an NDI source to a playout channel:

⊗ 🖵 AirX server			
▶ ♣ User accounts			
🔑 License info			
🛇 🕂 Assigned lives			
AV NewTek NDI			
🎇 External devices (plugins for ma	naging GPIO, video		
🋇 🛐 Playout channels			
🛇 🗹 💽 New channel			
A Users			
民 Channel redundancy (1 + 1	1 redundancy settings)		
🛱 Media folders and content	replacement		
Channel TAGs and EPG			
Channel live inputs	Add assigned live inp	ut 🕨 AV Input	
External Device Inputs	X Remove all	Marin Marine Marine Marine Marine Marin	NDT
📟 External Device Outputs			NDI
Outputs			
		1-	

Figure 66. Add Assigned live input to the Playout channel

Right-click on **Channel live inputs** and select the available streams from the context menu (outlined in red) to connect them to the Playout channel.



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The source settings pane in the right side of the app window is mainly for information. Available adjustable options are the following:

- The Video section contains settings for picture scaling (Letterbox/Anamorph/Pan&Scan) and checkbox to enable teletext if exists.
- The Map AV Audio section allows you to build audio mapping when there are multiple audio tracks in the input stream.
- The Map AV Subtitles section allows you to build subtitle mapping when there
 are multiple subtitle tracks in the input stream.

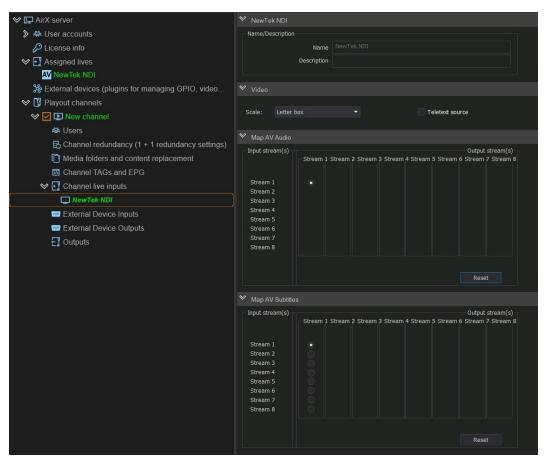


Figure 67. Live sources settings while connected to the Playout channel

Multiple source modes

AirX broadcast automation supports simultaneous operations with a large number of input streams. The number of simultaneously working Live sources is only limited by the hardware resources of the broadcast playout server. A guaranteed maximum (tested by Telestrider) is 8HD input streams per nVidia Quadro RTXA4000 GPU and less with a less powerful graphics adapter.

The final configuration for each specific task must be calculated individually by Telestrider Company.

There are two modes of operation with multiple sources:



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LIVE mode

Standard mode, recommended by Telestrider. The LIVE mode provides simultaneous decoding of input streams on the broadcast playout server. This mode is more resource-intensive because a separate Windows background process is created for each input stream.

In Live mode each of the input streams is continuously monitored by AirX services. This mode provides real-time monitoring of the connection state and the signal quality of the input stream. In case of disconnection or quality loss, AirX will inform you using the built-in notifications (see the **System monitoring tools** chapter for details).

Live mode is available for input streams in any supported formats (see **Channel live** inputs chapter).

LIVE mode configuration:

1. Add Live sources to the broadcast playout server as Assigned lives (see **Channel live inputs** chapter).

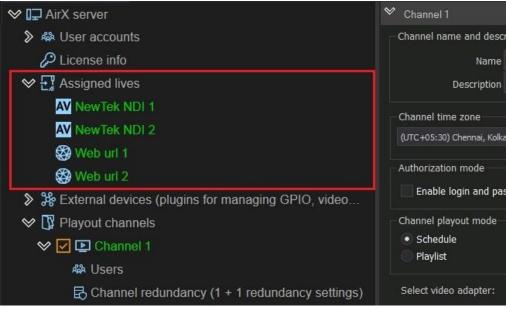


Figure 68. Add sources as Assigned lives

2. Distribute sources connected to the server over playout channels (see **Live sources connection and distribution** chapter).

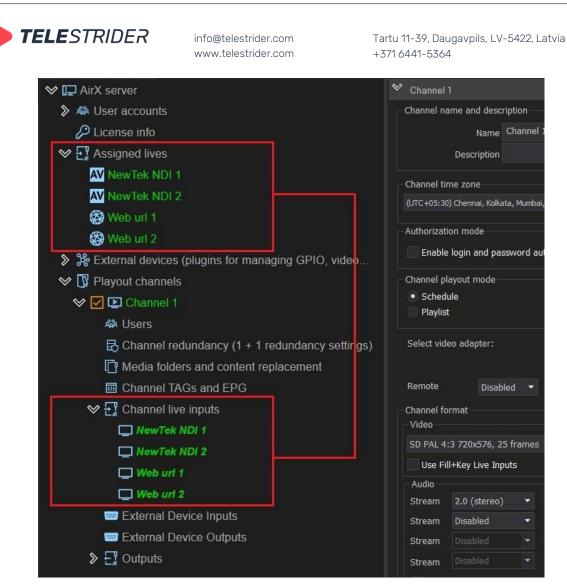


Figure 69. Add Assigned live inputs to the Playout channel

Each of the sources connected to the server can be added to any of the playout channels and/or to several channels at once.

Several sources can be connected to each playout channel at the same time.

3. After Live sources are added to the playout channel, you can use them in the schedule.

The figure below shows a part of the AirX schedule in the Channel Manager app. Expand the **Channel resources** tree in the left pane of the Channel Manager window and select the **Live** branch. The **Source content browser** contains all Live sources, available for the channel. You can add any Live source to the schedule using drag'n'drop.

ELE STRIDER	info@telestrider.com www.telestrider.com	Tartu 11-39, +371 6441-5	, Daugavpils, LV-542: 5364
Date Counter 2023-03-02 00:00:12 Time 00:33:53:14 00:00:4	9:08 _{32.24%} II 2178.r	Canada 4K_1.mp4 np4	<
AirX Channel Source [New channel]	× AirX Channel [New channel] OnAir: S		
♥ 🗉 Channel resources	Show OnAir Edit Show column	\$	
🕼 Live	IType I CC I 🋕 I 🛍	📑 [¦] Scale Duration	Name
Scene	1	III 00:55:29:	03 2239.mp4
🖵 Logo	1	🗵 (1) 📃 00:00:04:	05 19772.mp4
🌐 Web URL		🗵 [;] 🔲 01:00:00:	00 NewTek NDI 1
▶ ↓ Events	(c)) 1	🖾 []] 🔲 01:00:00:	00 NewTek NDI 2
Source content browser	4 (<u>A) 1</u>	🖸 🕼 📘 01:00:00:	00 Web url 1
Type Name	((₂)) 1	🖾 📫 🔲 01:00:00:	00 Web url 2
🕅 NewTek NDI 1		📧 🗊 🔲 00:55:29:	03 2239.mp4
W NewTek NDI 2		💌 🕼 🔲 00:00:04:	05 19772.mp4
₩ Web url 1	Drag'n'Drop	O0:55:29:	03 2239.mp4
₩ Web url 2		🖸 🕼 📘 00:00:04:	:05 19772.mp4
		🖸 🗊 🔲 00:55:29:	03 2239.mp4
		🕑 🕼 📃 00:00:04:	05 19772.mp4
		🖸 🕼 📃 00:55:29:	.03 2239.mp4
		1 [] 🔲 00:00:04:	.05 19772.mp4
		1 [] 0 :55:29:	03 2239.mp4
		3 [1] 3 00-00-02-	00 19746 mp4
	Item's Scenes		† Ú
AirX Channel Preview [New channel]	Layer Offset start time Offse	t end time Duration	Name #

Figure 70. Add Live source to the schedule

Each Live source in the schedule is continuously monitored by AirX services. In case of disconnect or quality loss, you will see a red highlighting of the Live source in the schedule. If the Live source is Ok, it will be highlighted in blue.

WEB URL mode

Alternative mode of operation with multiple Web URL input streams. This mode is intended for reduction of the hardware load and for server resources optimization while a large number of input streams. Unlike Live mode, no Windows background processes are created on the broadcast playout server because Web URL mode **does not require** continuous decoding of input streams.

While working with Web URLs, you do not need to add them to the broadcast playout server as Assigned lives, or distribute them over playout channels. Web URL sources will not be displayed in the AirX Control configurator as channel resources. These input streams have to be configured from the client workstation from the Channel Manager application. In fact, Web URL input streams are only processed by AirX when they are in the On-air schedule position.

ATTENTION: In Web URL mode, AirX services will not provide decoding or monitoring of input streams, their connection state and the signal quality. The Web URL will be on the air, regardless of any stream corruption. AirX service will not inform you about an error.

WEB URL mode configuration:

 Launch the Channel Manager application. Expand the Channel resources tree in the left pane of the Channel Manager window and select the Web URL branch. Then, right-click on an empty space in the Source content browser window and select Add new Web Url from the drop-down list.

	info@telestrider.com www.telestrider.com	Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364
Date Counter 2023-03-02 00:003 Time 02:17:59:14 00:003	29:05	Canada 4K_1.mp4 np4
AirX Channel Source [New channel]	X AirX Channel [New channel] OnAir: S	chedule
♥ 🖪 Channel resources	Show OnAir Edit Show columns	i i i i i i i i i i i i i i i i i i i
🙀 Live	Type CC ⚠ 🛍	📑 [ț] Scale Duration
👑 Scene		💌 🕼 📃 00:00:04:05
Logo		💌 🚺 📃 00:55:29:03
🕀 Web URL		💌 🗊 📃 00:00:04:05
D Events		💌 🚺 📃 00:55:29:03
Source content browser		💌 🗊 📃 00:00:04:05
Type Name		💌 🕼 📃 00:55:29:03
		💌 🕼 📃 00:00:04:05
		🖾 🕼 📃 00:55:29:03
Find	Ctrl+F	🖾 🗊 📃 00:00:04:05
Copy		📧 📫 📃 00:55:29:03
Add new Web Url		1 🞲 📃 00:00:04:05
Remove selected W		1 🚺 📃 00:55:29:03
Show Media Info		2 🗊 🔲 00:00:03:00
Show Media into		1 🚺 📃 00:00:04:05

Figure 71. Add Web Url as a Channel source in Channel Manager app

 In the Add Web Url window, enter the URL into the top editable field and click Verify. After the URL validating, the Web url Name and Web url Description fields will be enabled. Modify these fields and Click Ok to save settings.

[New channel] AirX Channel manager		
OnAir View Help Lock interface		
Date Counter 2023-03-02 00:20:57:24 Time Count Down 02:39:28:08 00:36:44:09	▶ 2178.mp4 36.33% ▶ 19746.mp4 ♪ ♠ ♠ ♠ ♠ ♠ ♠ ♠ ▲ ▲	
AirX Channel Source [New channel]		
♥ 🕒 Channel resources Show	v OnAir Edit Show columns	
😭 Live	Type CC 🛕 🔛 💭 [;] Scale Duration Name	
👑 Scene	🔲 💾 💽 🕼 🔲 00:55:29:03 2239.n	np4
🖵 Logo	Add Web Url	×
🕀 Web URL	Please paste web url from the clipboard Ctrl+V:	
▶ ↓ Events	https://30a-tv.com/music.m3u8	Verify
Source content browser	Web uri Name:	
Type Name	30A-TV	
	Web url Description:	
	Local music channel	
	OK Cancel	
	0 0 0 0 0 0 0 0 0 0	mp4
	□ □ □ □ 00:55:29:03 2239.n	
	■ ■ ■ ■ 00:00:03:00 19746.	
		in the second se

Figure 72. Web URL stream settings

3. After Web URL sources are added to the Source content browser pane, you can add any source to the schedule using drag'n'drop.

ELESTRIDER	-	elestrider.c elestrider.c			11-39, Daugavpils, LV-54 6441-5364	22,
Date Counter 2023-03-02 00:27:40 Time 02:46:10:21 00:30:01	47.96%	 2178.mp 19746.mp 15746.mp 			Þ	
AirX Channel Source [New channel]	AirX Channel [New c					
♥ 🗉 Channel resources	Show OnAir Edit	Show columns				
🕼 Live	Type CC	🖵 🗘	Scale Duration	Name	Source	Ag
🔛 Scene			00:55:29:03	2239.mp4	D:\media\2239.mp4	
📑 Logo			00:00:04:05	19772.mp4	D:\media\19772.mp4	6+
🕀 Web URL			01:00:00:00	30A-TV	https://30a-tv.com/music.m3u8	
Description			00:55:29:03	2239.mp4	D:\media\2239.mp4	
Source content browser			00:00:04:05	19772.mp4	D:\media\19772.mp4	6+
Type Name			01:00:00:00	30A-TV	https://30a-tv.com/music.m3u8	
30A-TV			00:55:29:03	2239.mp4	D:\media\2239.mp4	0+
			00:00:04:05	19772.mp4	D:\media\19772.mp4	6+
			00:55:29:03	2239.mp4	D:\media\2239.mp4	
Drag'n'Dro	p		00:00:04:05	19772.mp4	D:\media\19772.mp4	
			00:55:29:03	2239.mp4	D:\media\2239.mp4	
			00:00:03:00	19746.mp4	D:\media\19746.mp4	12
	Item's Scenes				🗜 📫 Item's output events	
AirX Channel Preview [New channel]	Clayer Offset start	time Offset er	d time Duration	Name	# Offset start time	Of

Figure 73. Add Web URL source to the schedule

As you can see in the picture above, schedule items containing Web URLs are not highlighted. This visually differ them from Live sources added to the schedule.

External devices

AirX broadcast automation uses a plug-in system to support external devices: any compatible device can be supported upon the request of the customer. The terms of implementation are individual in each case.

External devices connection is similar to Channel live inputs connection:

- 1. Add External device to the broadcast playout server in External devices branch of the Server resource tree (left pane of the application window).
- 2. Distribute devices connected to the server over playout channels.

Select **External devices** (Plugins for managing GPIO, video routers, headend ...) branch in the Server resource tree, call the drop-down menu by right-clicking on the branch name. Select **Add external device** in the drop-down list and you will see a list of available devices.

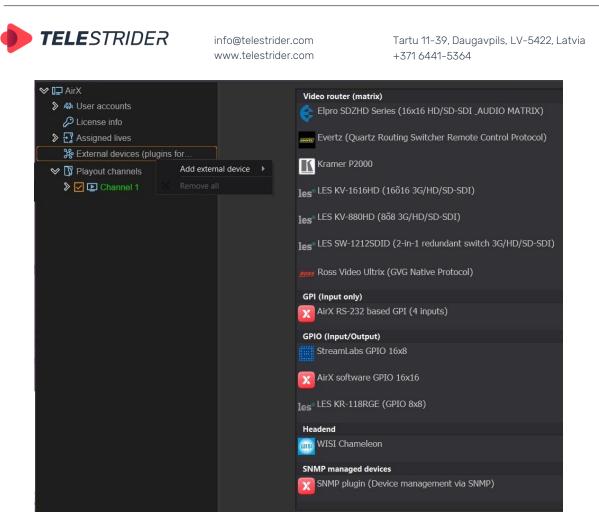


Figure 74. External devices list

Video router (matrix)

Let us review the Evertz routing switcher as an example, other devices can be connected and configured in the same way.

Select **External devices** (Plugins for managing GPIO, video routers, headend ...) branch of the Server resource tree, call the drop-down menu by right-clicking on the branch name. Select **Add external device** from the drop-down list and select the device that will receive control commands from the playout channel.

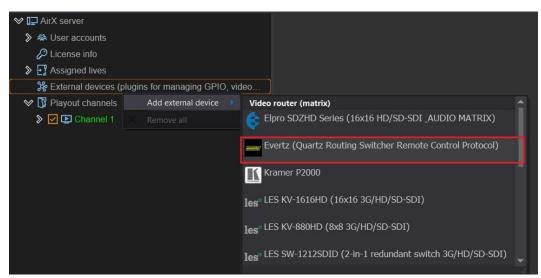


Figure 75. Add an Evertz routing switcher as an external device for the AirX server



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After the External device was added, you will see the name of the device in the **External devices** (Plugins for managing GPIO, video routers, headend ...) branch of the Server resource tree.

Click the name of the device to open the settings pane on the right side of the app window. In this pane you will see Info section, connection section and the Presets settings.

🛇 🖵 AirX server	♥ Info
All User accounts	Info
P License info	Video router (Matrix), Unknown, Evertz (Quartz Routing Switcher Remote Control Protocol); Inputs: 1024, Outputs: 1024
Stress Stres	
♥ 器 External devices (plugins for managing GPIO, video	Name/Description
📟 Evertz (Quartz Routing Switcher Remote Control 🔼	Name Evertz
🛇 🕼 Playout channels	Description Quartz Routing Switcher Remote Control Protocol
Image: Second	
	✓ Connection
3	
	Use LAN Host (IP): Port: 21
4	Outputs

Figure 76. External device settings

- 1. Info. Non-editable field contains information about the connected device.
- 2. Editable **Name/Description** fields. They have default values but can be changed manually. For example, the serial number of a specific device or other service information can be entered in these fields.
- Editable required field Connection. Contains checkboxes Use LAN and Use COM port for different types of device connection. For the Evertz routing switcher, check the Use LAN checkbox, enter the host address and port for connection.
- Editable field **Presets**. Contains settings for the control commands (presets) creation. Right-click in the empty space of the Outputs window and select **Add new preset** to create a new preset for external device control.

Stepsing Series (Plugins for managing GPIO, video.	Name/Description					
Evertz (Quartz Routing Switcher Remote Control.	Name Evertz					
♥ IPayout channels	Description Quartz Routing Switcher Remote					
❤ 🗹 🗈 Channel 1	❤ Connection					
& Users	Connection					
B Channel redundancy (1 + 1 redundancy setting	JS) Use COM port The value is undefined					
Media folders and content replacement	✓ Use LAN Host (IP): 235.0.0.1					
Channel TAGs and EPG						
₽ Channel live inputs	♥ Presets					
📟 External Device Inputs	Outputs					
External Device Outputs						
>> E Outputs	Add new preset					
	Edit					

Figure 77. Add new preset for External device control



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In the new **Video router (matrix) output** window enter the name of the event (switching the selected input to a specific output) and configure the switching parameters – the number of the input and the number of the output.

♥ I⊒ AirX server									
S ♣ User accounts D License info D Assigned lives		Use COM port	The value is undefined Host (IP): 235.0.0.1	Port: 21					
 Sterral devices (plugins for managing GPIO, vic Evertz (Quartz Routing Switcher Remote Cont Playout channels I Channel 1 Users Channel redundancy (1 + 1 redundancy Media folders and content replacement Channel TAGs and EPG Channel live inputs External Device Inputs External Device Outputs I outputs 									
	Name	Video router (matrix) output Name Evertz Out_3							
	Input 1	Output(s), Exa	smple: 1,2,3,4,5,						
				ОК Са	ncel				

Figure 78. Configure the switching preset parameters

Click **Save** in the main menu of AirX Control app to save changes.

Next you have to distribute connected external devices over the playout channels.

ATTENTION: Each of the External devices connected to the server can be added to any of the playout channels and/or to several channels at once.

Several devices can be connected to each playout channel at the same time.

Expand the Channel resource tree and select the **External Device Outputs** branch to connect a device to a channel. Check the **Enable plugin usage** checkbox for the selected device. Then check the boxes next to the configured presets.

♦ 🖵 AirX server	External device outputs se	ttings	
	▲ Evertz		
License info	Enable plugin usage	~	
E Assigned lives	Evertz Out_3	×	
℅ Sternal devices (plugins for managing GPIO, video	L		
📟 Evertz (Quartz Routing Switcher Remote Control			
🛇 🕼 Playout channels			
🛇 🗹 🗈 Channel 1			
& Users			
B Channel redundancy (1 + 1 redundancy settings)			
Media folders and content replacement			
Ghannel TAGs and EPG			
∃ Channel live inputs			
📟 External Device Inputs			
External Device Outputs			
Set a contract of the set of			

Figure 79. Enable the External device connection to the playout channel



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After an External device connected to the Channel resources tree, click **Save** in the main menu of AirX Control app to save changes.

Next you have to launch the Channel Manager app and add the control commands to the schedule. In case using the **Autoload schedule** function, most likely, the control commands will be already added in the schedule by a third-party broadcast traffic management system. But if you want to create (or edit) the schedule manually, follow the instructions:

1. Open the schedule in the **Channel Manager** app. Expand the channel resource tree as shown (1).

AirX Channel Source [New channel]	AirX Channel [New channe	I] OnAir: Schedule				×
♥ 🗉 Channel resources	Show OnAir Edit Sho	w columns				
🚯 Live	Type CC	🗘 I 🖼 I 🗂 I 🗘	Scale Duration	Name	Source	Age
🔛 Scene			00:00:04:05	5 19772.mp4	D:\media\19772.mp4	6+
🖵 Logo			00:55:29:03	2239.mp4	D:\media\2239.mp4	0+
🕀 Web URL			00:00:04:05	5 19772.mp4	D:\media\19772.mp4	6+
Levents			00:55:29:03	2239.mp4	D:\media\2239.mp4	0+
♥ ↓ Plugins		3 🔍 🛱	00:00:04:05	5 19772.mp4	D:\media\19772.mp4	6+
♥ ↓ Evertz		💛 🗵 🖨	00:00:04:05	5 19772.mp4	D:\media\19772.mp4	6+
🗘 Output			00:55:29:03	3 2239.mp4	D:\media\2239.mp4	0+
Channel programming			00:55:29:03	3 2239.mp4	D:\media\2239.mp4	0+
Media folders	item's Scenes		1 🗘 Ite			p
Source content browser 4	Layer Offset start time	Offset end time Durati	on Name #	Offset start time Of	ffset end time Name	
Type Name			÷			
Evertz Out_3	2		2			
	3		3			
	5		5			
	6		5			
	7					

Figure 80. Add the External device preset to the schedule. Step 1

Find the list of the available presets (external events) in the **Source content browser** pane (2). Select a preset you want to add to the schedule.

In the schedule window, click (3) on the schedule row you want to combine with the external event (External device control command).

2. Move the external event from the **Source content browser** window to the **Item's output events** window using drag'n'drop (4).

AirX Channel Source [New channel]	AirX Channel [New cha	annel] OnAir: Sch	edule								×
♥ 🗉 Channel resources	Show OnAir Edit	Show columns									
🖓 Live	Type CC	Ļ I∭II		[;]	Scale	Durati	on	Name	Source		Age
🔛 Scene						00:00	:04:05	5 19772.mp4	D:\media	19772.mp4	6+
📮 Logo							:29:03	3 2239.mp4	D:\media	2239.mp4	0+
🌐 Web URL						00:00	:04:05	5 19772.mp4	D:\media	\19772.mp4	6+
▶ ↓ Events		<u>Á</u>				00:55	:29:03	3 2239.mp4	D:\media	\2239.mp4	0+
♥ 🇘 Plugins						00:00	:04:05	5 19772.mp4	D:\media	19772.mp4	6+
♥ ♫ Evertz		5				00:00	:04:05	5 19772.mp4	D:\media	19772.mp4	6+
🗘 Output						00:55	:29:03	3 2239.mp4	D:\media	2239.mp4	0+
Channel programming						00:55	:29:03	3 2239.mp4	D:\media	2239.mp4	0+
🔉 📕 Media folders	item's Scenes					- Ą	📮 Ite	em's output events			џ
Source content browser 4	Layer Offset start tir	me Offset end	l time	Duratio	on Na	me	#	Offset start time	Offset end time	Name	
Type Name							[1	00:00:10:00	00:55:29:03	Evertz Out	_3
Evertz Out_3	2 D	rag'n'D	ron			_	2				
		rug ii b	Top					6			
	4 4										
						I					
	6										

Figure 81. Add the External device preset to the schedule. Step 2

You will see the bell icon (5) on the schedule row combined with an external event.

If necessary, edit the external event's output parameters (6).



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Headend

Let us review the WISI Chameleon headend as an example. Almost all the connection steps are similar to those described in the **Video router (matrix)** chapter.

Select **External devices** (Plugins for managing GPIO, video routers, headend ...) branch of the Server resource tree, call the drop-down menu by right-clicking on the branch name. Select **Add external device** from the drop-down list and select the WISI Chameleon headend device.

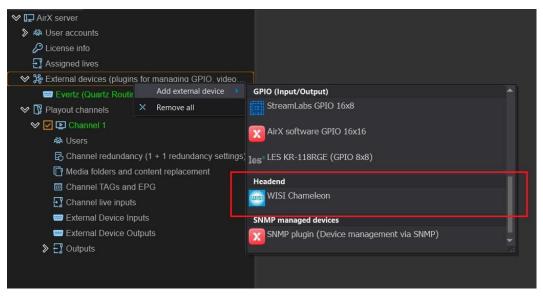


Figure 82. Add a WISI Chameleon headend as an external device for the AirX server

After the External device was added, you will see the name of the device in the **External devices** (Plugins for managing GPIO, video routers, headend ...) branch of the Server resource tree.

Click the name of the device to open the settings pane on the right side of the app window. In this pane you will see Info section, connection section and the Presets settings.

♦ 🖵 AirX server	♥ Info				
> 🕸 User accounts	– Info Headend, WISI, WISI C	hameleo	n; Inputs: 16, Outputs: 16		
License info Assigned lives					
✓ Sector and the sector of	Name/Description	Name	WISI Chameleon		
Evertz (Quartz Routing Switcher Remote Control	Des	cription	Tribi chumcheon		
WISI Chameleon					
V 🕼 Playout channels	✓ Connection				
🛇 🗹 🖪 Channel 1					
All Users					
B Channel redundancy (1 + 1 redundancy settings)	Vse LAN	Host (I	P): 192.168.1.21	Port:	
Media folders and content replacement					
Channel TAGs and EPG	➤ Presets				
🕁 Channel live inputs					
📟 External Device Inputs					
📟 External Device Outputs					
Sector Strategy Contracts					

Figure 83. External device settings

The settings pane is similar to that described in the **Video router (matrix)** chapter.



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Check the **Use LAN** checkbox to enable connection and enter the host address and port for connection. Set up headend presets in the **Outputs** window. Click **Save** in the main menu of AirX Control app to save settings.

Expand the Channel resource tree and select the **External Device Outputs** branch to connect a device to a channel. Check the **Enable plugin usage** checkbox for the selected device. Then check the boxes next to the configured presets.

AirX server	Sector and the settings Sector	
 AirX server AirX server License info Assigned lives Second Exerct (Quartz Routing Switcher Remote Control Evertz (Quartz Routing Switcher Remote Control WISI Chameleon VISI Channel s Channel 1 Users Channel redundancy (1 + 1 redundancy settings) Media folders and content replacement Channel TAGs and EPG 	 External device outputs settings Evertz Enable plugin usage Evertz Out_3 WISI Chameleon Enable plugin usage ABC 	▼ ▼ ▼ ▼
Channel live inputs External Device Inputs External Device Outputs		
> E Outputs		

Figure 84. Enable the headend connection to the playout channel

After an External device connected to the Channel resources tree, click **Save** in the main menu of AirX Control app to save changes.

Finally you can work with the schedule as described in the **Video router (matrix)** chapter. All the steps are completely similar.

GPIO Presets

Call the context menu of the **External devices** (Plugins for managing GPIO, video routers, headend ...) branch of the Server resource tree to add a GPIO device. Select **Add external device** from the drop-down list and select the GPIO device you need. In the example below this is a LES Ethernet-GPIO cross-converter (8 GPO, 8 GPI).

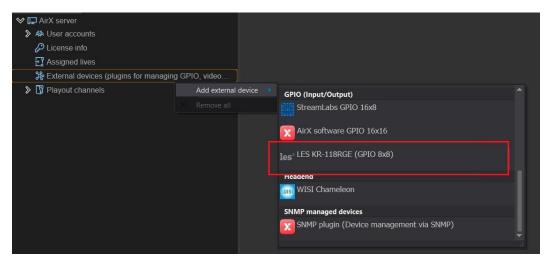


Figure 85. Add GPIO device



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Click on the name of the device to open the settings pane on the right side of the app window. In this pane you will see Info section, connection section and the Presets settings:

♥ 🖵 AirX server	♥ Info
 > ♣ User accounts ⊘ License info 1 > 1 Assigned lives 	Info GPIO, LES, LES KR-118RGE (GPIO 8x8); Inputs: 8, Outputs: 8
 	Name/Description Name LES KR-118RGE Description GPIO 8x8
3	Connection Use COM port The value is undefined
	Vise LAN Host (IP): Port: 8020
	₩ Presets
	Inputs Outputs
4	Add new preset Edit Delete
	5 Functionality is available only when the service is Test plugin

Figure 86. GPIO device settings

The settings window contains the following fields:

- 1. Info. Non-editable field that contains information about the connected device
- Editable Name/Description fields. They have default values but can be changed manually. For example, the serial number of a specific device or other service information can be entered in these fields.
- Editable required field Connection. Contains checkboxes Use LAN and Use COM port for different types of device connection. For the LES Ethernet-GPIO crossconverter, check the Use LAN checkbox, enter the host address and port for connection (8020 by default).
- 4. Editable field **Presets**. Contains settings for the GPI and GPO presets creation. You can use GPI presets to control AirX playback with an external devices. Right-click in the empty space of the **Inputs** window and select **Add new preset** to create a new GPI preset. In the new **GPI Event** window enter the name of the GPI event and check the boxes for the input mask. Click OK when the setting is complete.



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Inputs	Outputs	
		:
18RGE		Delay (msec.) 0
	4 🖌 5 6 7 8	
		OK Cancel
	18RGE	18RGE

Figure 87. GPI event settings

You can also use GPO presets to manage external devices using AirX schedule. Right-click in the empty space of the **Outputs** window and select **Add new preset** to create a new GPO preset. In the new **GPO Event** window enter the name of the GPO event and check the boxes for the output mask. Click OK when the setting is complete.

	♥ Presets				
	Inputs	Outputs			
PO Event					>
Name					
LES KR-	118RGE Out				
			1		
Mark the c	combination of outputs				
0	1 🗸 2 🗸 3 🔤	5 🖌 6 🗹 7			
				ок	Cancel
				UK	Cancer

Figure 88. GPO event settings

5. **Test** plugin is only available when the AirX services are stopped.

Click **Save** in the main menu of AirX Control app to save changes. The name of the GPIO device in the Server resource tree will change color to green

If you want to edit a preset, right-click it and find the **Edit** menu. Do not forget to save changes after making them.

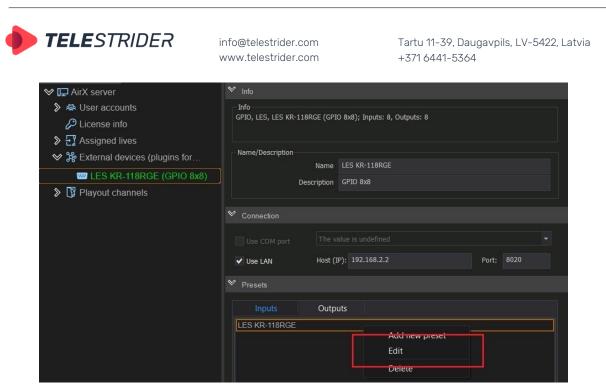


Figure 89. Edit GPIO preset

Further setup depends on whether the device is GPI or GPO.

Sending commands using AirX schedule (GPO).

Expand the Channel resource tree and select the **External Device Outputs** branch to connect a device to a playout channel. Check the **Enable plugin usage** checkbox for the selected device. Then check the boxes next to the configured presets.

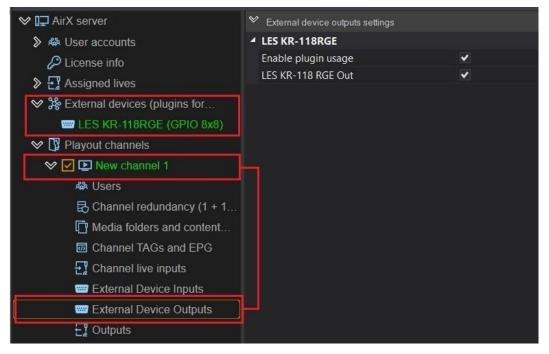


Figure 90. Enable the GPO device connection to the playout channel

After the GPO device connected to the Channel resources tree, click **Save** in the main menu of AirX Control app to save changes.

Now you can work with the schedule as described in the **Video router (matrix)** chapter. All the steps are completely similar.



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AirX playback control with an external devices (GPI)

Expand the Channel resource tree and select the **External Device Outputs** branch to connect a device to a playout channel. Check the **Enable plugin usage** checkbox for the selected device. Then check the boxes next to the configured presets.

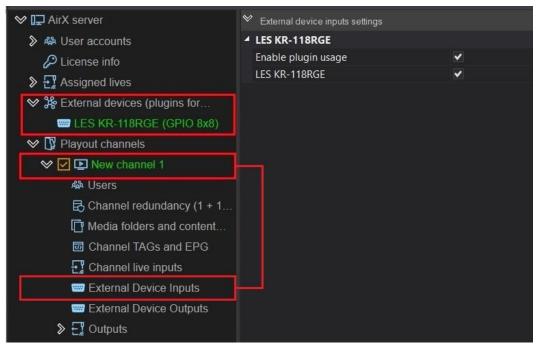


Figure 91. Enable the GPI device connection to the playout channel

After the GPI device connected to the Channel resources tree, click **Save** in the main menu of AirX Control app to save changes.

Next you have to launch the Channel Manager app and add the input events (GPI) to the schedule. In case using the **Autoload schedule** function, most likely, the GPI events will be already added in the schedule by a third-party broadcast traffic management system. But if you want to create (or edit) the schedule manually, follow the instructions:

AirX Channel Source [New channel]	AirX Channel [New channel	OnAir: Schedule			
♥ 🖺 Channel resources	Show OnAir Edit Show	v columns			
(۲) Live	Scale Duration	Name	ExtEvent	Age	Smoking
Scene	00:55:29:03	19772.mp4 2239.mp4		0+	
> 🖸 Logo	00:00:04:05	19772.mp4		6+	
> Web URL	00:55:29:03	2239.mp4	LES KR-118RGE	0+	
Constant S Constant S	00:00:03:00	19746.mp4		12+	
 A Plugins Channel programming 	00:00:04:05	19772.mp4		6+	
 Media folders 	00:55:29:03	2239.mp4		• 0+	
	00:55:29:03	2239.mp4	Vo event		
	00:00:04:05	19772.mp4	LES KR-118	RGE	
	00:55:29:03	2239.mp4		0+	
Source content browser	00:00:04:05	19772.mp4		6+	
Type Name	00:55:29:03	2239.mp4		0:	

1. Open the schedule in the **Channel Manager** app.

Figure 92. GPI event in the AirX schedule



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- In the schedule window, click on the schedule row you want to combine with the external GPI event. In the **ExtEvent** column call the drop-down list of events and select the event you need.
- 3. During playback of a schedule with GPI events, AirX is in a continuous monitoring state of the incoming GPI. When such an event occurs, AirX playback position will jump to the nearest schedule row, which has a value in the ExtEvent column.

Soft GPI events and features

The AirX broadcast automation has a built-in Software GPIO functionality that allows applications to interchange commands within the automation system.

This feature is mainly applicable to manage (or trigger) the AirX Record multi-channel recording system using AirX schedule. You can automatically start or stop the process of recording a video file using pairs of GPIO events within the same server.

You have to configure Soft GPI on both the playout channel and the recording channel to use this feature.

ATTENTION: Before you start to configure Soft GPI, the recording channel and the playout channel have already to be configured.

1. Add the AirX software GPIO 16x16 as External device to the Server resource tree, as shown:

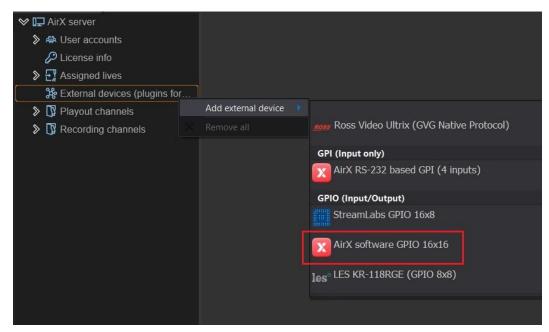


Figure 93. Add AirX software GPIO as External device

 Add a pair of presets for the input event (Inputs) and for the output (Outputs). As described in the chapters above, right-click in an empty field of the Inputs or Outputs window and select Add new preset to add a preset. In the new GPI / GPO Event window enter the name of the event and check the boxes for the input/output mask.

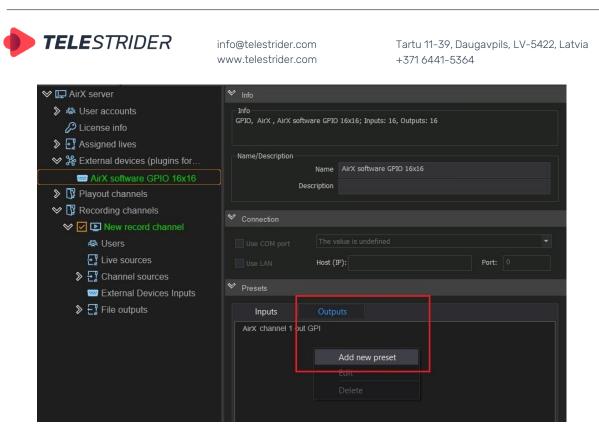


Figure 94. A pair of AirX software GPIO presets creation

GPO Event	×
Name channel 1 out GPI	
Mark the combination of outputs • 0 • 1 2 3 • 4 • 5 6 7 • 8 • 9 10 11 12 13 14 15 OK Cancel	
GPI Event	×
Name Delay (msec.)	
channel 1 in GPI 0	
Mark the combination of inputs	
Mark the combination of inputs	
✓ 0 ✓ 1 2 3 ✓ 4 ✓ 5 6 7 ✓ 8 ✓ 9 10 11 12 13 14 15	

Figure 95. AirX software GPIO presets settings

- Do not forget to click Save and Restart in the main menu of AirX Control app to save new settings and apply them.
- 4. The name of the AirX software GPIO device in the Server resource tree will change color to green: that means it is ready to use. The configured Soft GPI plugins will also be automatically added to the corresponding branches of the



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playout and recording channels resource trees, so you do not have to add them manually. It will only be necessary to check the enable boxes of plugins.

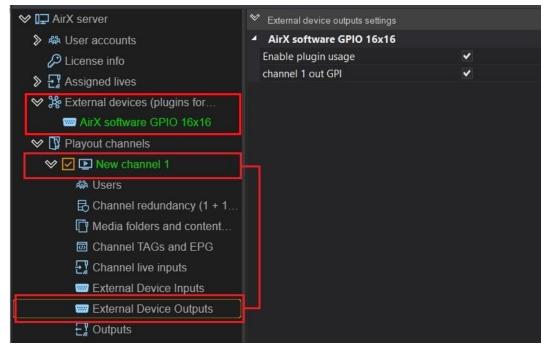


Figure 96. Enabled AirX software GPIO, connected to the playout channel

5. The next step you have to enable software GPIO both for the playout channel and for the recording channel.

Playout channel: In the Server resource tree select the playout channel you want to configure. Expand the resource tree of the selected channel. Find the **External Device Outputs** branch and click it. In the right pane of the AirX Control window check the box **Enable plugin usage** and select the presets you want to connect to this channel. These are **GPO** plugins.

Recording channel: In the Server resource tree select the recording channel you want to configure. Expand the resource tree of the selected channel. Find the **External Device Inputs** branch and click it. In the right pane of the AirX Control window check the box **Enable plugin usage** and select the presets you want to connect to this channel. These are **GPI** plugins.

ATTENTION: The **AirX** playout channel must be connected as the Channel source for the **AirX Record** recording channel.



Figure 97. Software GPIO connection - playout channel and recording channel

In the Figure 97 you can see:

- 1. The name of the AirX software GPIO device in the Server resource tree is green. That means it is configured and ready to use.
- 2. The AirX playout channel is connected as the Channel source for the AirX Record recording channel.
- 3. Location of the software GPO branch in the playout channel resource tree (External Device Outputs) and location of the GPI branch in the recording channel resource tree (External Device Inputs). GPIO connection settings (in the right pane of the app window).

NOTE: Do not forget to save changes!

Now you can use AirX software GPIO to automate the process of recording.

How it works: AirX can send the GPOs embedded in the playout channel's output streams during of a schedule playback.

TELESTRIDER	info@telestrider.com www.telestrider.com	Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364
INew channel] AirX Channel manager OnAir View Help Lock interface Date Counter Counter Counter Counter Count Dava Count	6.86%	>
AirX Channel Source [New channel]	irX Channel [New channel] OnAir: Schedule how OnAir Edit Show columns Type CC Show columns 	In Out Name 00:00:00:00 00:01:00:00 ALIVE Canada 4K_1.m 00:00:00:00 00:01:00:00 Aerial Drone 5K 00:00:00:00 00:01:00:00 Football in Ultra HD (2 00:00:00:00 00:01:00:00 Macro Match Light [4H
AirX Channel Preview [New channel] X Audio 2 1	Item's output events Offset start time Offset end time Name 00:00:10:00 00:00:50:00 channel 1 out GPI	Program Layer Offset start time Offset end tin 1 2 3 4 5

Figure 98. AirX Channel Manager app window

In the Figure 98 you can see a part of the Channel Manager application's interface. (1) Schedule rows. The active row (playback position) is green. The bell icon means that the external event is connected to the schedule row as the Item's output event. (2) Item's output events are connected to the schedule rows.

The output stream of the AirX playout channel must be connected as a Channel source for the AirX Record recording channel (see Figure 97). The AirX Record recording service must be set in the **recording by schedule** mode. In the moment AirX Record catch the GPI event from the AirX playout channel it automatically starts recording the video file.

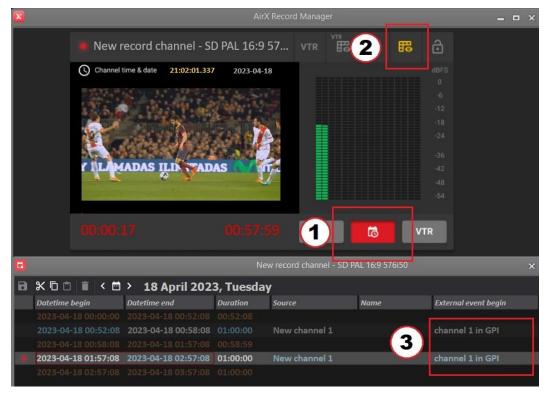


Figure 99. AirX Record app window



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In the Figure 99 you can see a part of the AirX Record application's interface. (1) The **recording by schedule** mode is set. (2) The schedule editor window is open. (3) The start of the recording by the incoming GPI is set.

Outputs

All supported **Channel output** types can be divided into three groups: IP (1), Internet (2) and AV outputs (3). If you have an AV capture card installed, you will see its outputs in the context menu in group 3.

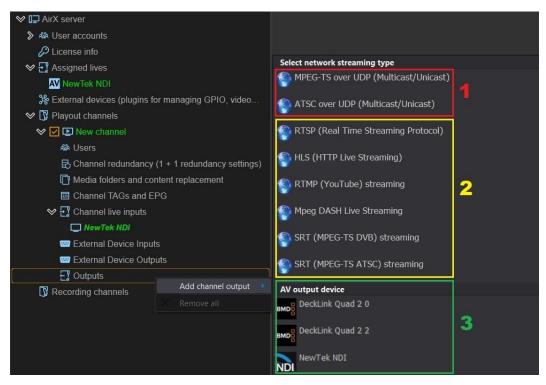


Figure 100. Network streaming types

UDP Output

The AirX broadcast automation system supports the UDP output streams in MPEG-TS and ATSC. The difference is in the multiplexer parameters (see below).

First step: call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **MPEG-TS over UDP (Multicast/Unicast)** or **ATSC over UDP (Multicast/Unicast)** output stream type.

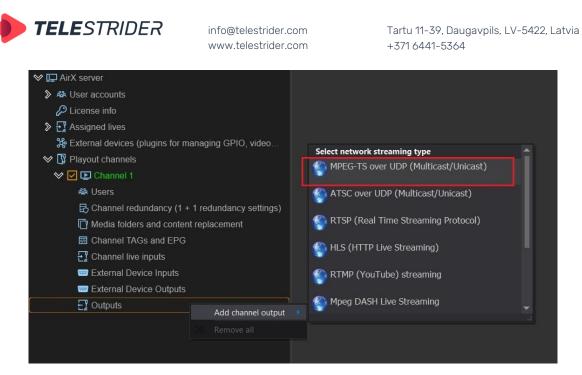


Figure 101. Add MPEG-TS over UDP channel output

After UDP is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

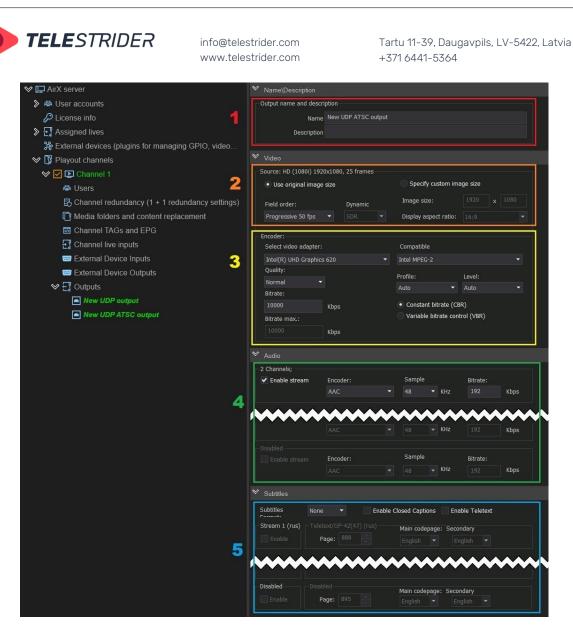


Figure 102. UDP Output settings (part 1)

- Editable Name/Description fields. The Name field is required; it has the "New UDP / UDP ATSC output" default value, but can be changed manually. The field Description is optional.
- The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel the Output belongs to. In this guide, the HD channel is used as an example, so the header will be Source: HD(1080i) 1920x1080, 25 frames.

The field contains two checkboxes:

 Use original image size. Remain the image size and aspect ratio unchanged. After checking the box, the remaining options of the field will become available: the Field order drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first. For MPEG-TS over UDP output, the default is Top field first. For ATSC over UDP output, the default is Progressive 50 fps.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

- **Specify custom image size**. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as



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well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.

- 3. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate) these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4 compression in accordance with the DVB standard. High is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.
 - **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
 - Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 4. The **Audio** pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3), sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).
- 5. The **Subtitles** pane contains subtitle settings for the output stream. AirX software supports up to 8 multilingual subtitle streams for each channel output at the same time. Select the **Subtitle Format** in the drop-down list (None, DVB, EBU-TT) to enable DVB subtitles. The **Enable** checkboxes will be automatically activated. Check the boxes you want to use. The number of subtitles streams available for activation depends on the basic settings of the playout channel.



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❤ I⊒ AirX server	Subtitles				Hard Subti		
S ♣ User accounts	Stream	Enabled	✓ La	ng: rus			File S
🔑 License info	Stream	Enabled	▼ La	ng: eng			
	Stream	Disabled	▼ La	ng:			
🐯 Web url	Stream		👻 La	ng:			
AV NewTek NDI	Stream		🔻 La	ng:			
✤ External devices (plugins for managing GPIO, video	Stream		🔹 La	ng:			Edit t
❤ 🕼 Playout channels	Stream		▼ La	ng:			Warning! Tex
V V IN New channel	Stream		🝷 La	ng:			apply after res
彝 Users 民 Channel redundancy (1 + 1 redundancy settings)	♥ Channel	folders					
	 ♥ Channel ♥ Subtitles 	~~~	~~	~~	~~~	~	~~~
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Figure 103. The subtitles output settings (UDP stream)

Check the box **Enable Closed Captions** if you want to use them. The **Enable** checkboxes will be automatically activated for all the available subtitles streams. Check the boxes you need.

The enabling of teletext is similar: check the box **Enable Teletext** and select the streams you need as described above. After selecting the subtitles streams you have to specify teletext pages in the **Teletext/OP-42(47)** field. The default value is 888, you can change it manually. And finally, select the Main and Secondary codepages languages from the drop-down lists.



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🛇 🖵 AirX server	♥ Muxer			
> ♣ User accounts	ID	Program		
🖉 License info	Transport ID 1	Program		PID 1000 *
Solution State	Major CH 1	Service	Channel 1	
Sector al devices (plugins for managing GPIO, video	Minor CH 1	Туре	Terrestrial	
🛇 🕼 Playout channels				
🛇 🗹 🖪 Channel 1	Stream PID			
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Channel TAGs and EPG	Audio 2 1003 🐥 Audio 4	4 1005 🔺	Audio 6 1007 🐥	Audio 8 1009 🐥
🛃 Channel live inputs				
External Device Inputs	Subs 1 1010 Subs 3		Subs 5 1014	Subs 7 1016
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	Audio 1 1002 + Audio 1 Audio 2 1003 + Audio 4 Subs 1 1010 + Subs 3 Subs 2 1011 + Subs 4	3 1004 ¢ 4 1005 ¢ 3 1012 ° 6 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 🛟 Audio 8 1009 🛟 Subs 7 1016 ;
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8	Audio 1 1002 + Audio 1 Audio 2 1003 + Audio 4 Subs 1 1010 + Subs 3 Subs 2 1011 + Subs 4	3 1004 ¢ 4 1005 ¢ 3 1012 ° 6 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 🛟 Audio 8 1009 🛟 Subs 7 1016 ;
8	Audio 1 1002 + Audio 1 Audio 2 1003 + Audio 4 Subs 1 1010 + Subs 3 Subs 2 1011 + Subs 4 SCTE-35 Stream PID Enable Stream PID Teletext Stream	3 1004 ¢ 4 1005 ¢ 3 1012 ¢ 4 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 🛟 Audio 8 1009 🛟 Subs 7 1016 ;
8	Audio 1 1002 ÷ Audio 3 Audio 2 1003 ÷ Audio 4 Subs 1 1010 Subs 3 Subs 2 1011 Subs 4 SCTE-35 Stream Enable Stream PID Teletext Stream PID	3 1004 ¢ 4 1005 ¢ 3 1012 ¢ 4 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 🛟 Audio 8 1009 🛟 Subs 7 1016 ;
8	Audio 1 1002 ÷ Audio 3 Audio 2 1003 ÷ Audio 4 Subs 1 1010 ÷ Subs 3 Subs 2 1011 • Subs 3 Subs 2 1011 • Subs 4 Subs 4 Subs 4 1010 • Subs 4 Subs 4 Subs 5 1011 • Subs 4 Subs 4 Subs 6 Stream PID Teletext Stream PID EPG text encoding	3 1004 ¢ 4 1005 ¢ 3 1012 ¢ 4 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 🛟 Audio 8 1009 🛟 Subs 7 1016 ;
8	Audio 1 1002 ÷ Audio 3 Audio 2 1003 ÷ Audio 4 Subs 1 1010 ÷ Subs 3 Subs 2 1011 • Subs 3 Subs 2 1011 • Subs 4 Subs 4 Subs 4 1010 • Subs 4 Subs 4 Subs 5 1011 • Subs 4 Subs 4 Subs 6 Stream PID Teletext Stream PID EPG text encoding	3 1004 ¢ 4 1005 ¢ 3 1012 ¢ 4 1013 ¢	Audio 5 1006 * Audio 6 1007 * Subs 5 1014 *	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 +
8	Audio 1 1002 C Audio 3 Audio 2 1003 Audio 4 Subs 1 1010 S Subs 3 Subs 2 1011 S Subs 4 SCTE-35 Stream Enable Stream PID Teletext Stream Enable Stream PID EFG text encoding Default (UTF-8) Strict CBR Multiplexing	1004 + 4 1005 + 4 1012 + 1012 - + 1010 - + 1020 - +	Audio 5 1006 + Audio 6 1007 + Subs 5 1014 + Subs 6 1015 +	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 + -
8	Audio 1 1002 + Audio 3 Audio 2 1003 + Audio 4 Subs 1 1010 + Subs 3 Subs 2 1011 - Subs 4 Subs 4 Subs 2 1011 - Subs 4 Subs 4 Subs 5 Subs 6 Subs 7 Subs	1004 + 4 1005 + 4 1012 + 1012 - + 1010 - + 1020 - +	Audio 5 1006 + Audio 6 1007 + Subs 5 1014 + Subs 6 1015 +	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 + -
8	Audio 1 1002 Audio 3 Audio 2 1003 Audio 4 Subs 1 1010 Subs 3 Subs 2 1011 Subs 4 SCTE-35 Stream Enable Stream PID Teletext Stream Enable Stream PID EFG text encoding Default (UTF-8) Strict CBR Multiplexing	1004 * 1005 * 1012 * 1013 * 1200 * 1020 *	Audio 5 1006 + Audio 6 1007 + Subs 5 1014 + Subs 6 1015 + Minimum 0	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 + -
	Audio 1 1002 Audio 3 Audio 2 1003 Audio 4 Subs 1 1010 Subs 3 Subs 2 1011 Subs 3 Subs 2 1011 Subs 4 SCTE-35 Stream Enable Stream PID Feletext Stream Enable Stream PID EFG text encoding Default (UTF-8) Strict CBR Multiplexing	3 1004 \$ 4 1005 \$ 4 1012 \$ 1 1013 \$ 1 1020 \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1030 \$ \$ 1040 \$ \$ 1050 \$ \$ 1040 \$ \$ 1050 \$ \$ 1050 \$ \$	Audio 5 1006 + Audio 6 1007 + Subs 5 1014 + Subs 6 1015 + Minimum 0 Lasses 4 1015 +	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 + -
	Audio 1 1002 + Audio 3 Audio 2 1003 + Audio 4 Subs 1 1010 + Subs 3 Subs 2 1011 - Subs 3 Subs 2 1011 - Subs 4 Subs	3 1004 \$ 4 1005 \$ 4 1012 \$ 1 1013 \$ 1 1020 \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1020 \$ \$ 1030 \$ \$ 1040 \$ \$ 1050 \$ \$ 1040 \$ \$ 1050 \$ \$ 1050 \$ \$	Audio 5 1006 + Audio 6 1007 + Subs 5 1014 + Subs 6 1015 + Minimum 0 Lasses 4 1015 +	Audio 7 1008 + Audio 8 1009 + Subs 7 1016 + Subs 8 1017 + -

Figure 104. UDP Output settings (part 2)

The **Muxer** pane contains multiplexer settings for multistream IP transmission. Changing any settings in the Muxer pane requires a high-level of user competence in assistance with the technical documentation. Please do not change these settings unless necessary.

6. MPEG-TS over UDP Muxer settings



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♥ □ AirX server 象 ゆ User accounts	♥ Muxer	
 Clicense info Assigned lives External devices (plugins for managing GPIO, video 2 IP Playout channels INew channel 	ID Program Transport ID 1 Network ID 256 Provider Network name	PID 1000 🛟
& Users 民 Channel redundancy (1 + 1 redundancy setting 3	Video 1001 - Disabl	e video stream
Media folders and content replacement Channel TAGs and EPG	Audio 1 1002 🔺 Audio 3 1004 🔺 Audio 5 1006	Audio 7 1008
➤ Channel live inputs	Audio 2 1003 🛕 Audio 4 1005 🗼 Audio 6 1007	Audio 8 1009 +
External Device Inputs	Subs 1 1010 🔺 Subs 3 1012 🔺 Subs 5 1014	Subs 7 1016
 External Device Outputs 	Subs 2 1011 🔹 Subs 4 1013 🗘 Subs 6 1015	* Subs 8 1017 *

Figure 105. MPEG-TS over UDP Muxer settings

- 1. The **ID** pane contains the **Transport ID** field to identify the package and the **Network ID** field to identify the network.
- The **Program** pane contains: the **Program** field for identifying the program number in the transport stream, the **PID** field, the **Service**, **Provider** and **Network name** editable text fields. You can modify these text fields.
- 3. The **Stream PID** pane contains the **Disable video stream** checkbox to disable video data transmission (to hold only audio and/or service data in the output stream), as well as fields for specifying the **PIDs** with **video data**, **audio data and subtitles**.

Changing any settings in Stream PID pane requires a high level of user competence and experience with the transport stream structure! We strongly recommend you do not change the settings of the Stream PID pane.

7. ATSC over UDP Muxer settings

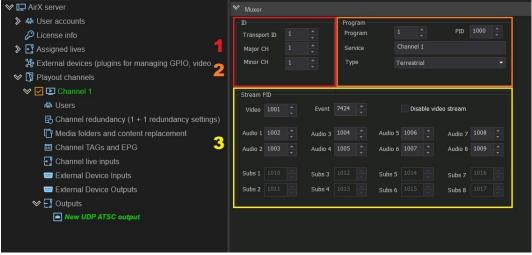


Figure 106. ATSC over UDP Muxer settings

- The ID pane contains the Transport ID field to identify the package and also Major CH and Minor CH identification fields for digital subchannels numbering.
- The **Program** pane contains: the **Program** field for identifying the program number in the transport stream, the **PID** field, and the **Service** editable text field. The drop-down list **Type** is intended for selection the distribution model – **Terrestrial** or **Cable**.



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3. The **Stream PID** pane contains the **Disable video stream** checkbox to disable video data transmission (to hold only audio and/or service data in the output stream), as well as fields for specifying the **PIDs** with **video data**, **audio data and subtitles**.

Changing any settings in Stream PID pane requires a high level of user competence and experience with the transport stream structure! We strongly recommend you do not change the settings of the Stream PID pane.

8. The **Muxer** pane, **SCTE-35 Stream** field contains the **Enable Stream** checkbox for insertion of SCTE-35 AD markers and a field to select the PID with SCTEs. We recommend do not change the default PID value.

The **Muxer** pane, **Teletext Stream** field contains the **Enable Stream** checkbox to enable teletext insertion and a field to select the PID number containing the teletext data. We recommend do not change the default PID value.

The **Muxer** pane, the **EPG text encoding** field allows you to select the EPG encoding. The default value is UTF-8.

The **Strict CBR Multiplexing** checkbox allows you to set the multiplexing mode with a fixed bit rate and set the **Minimum** bit rate.

9. The Destination (Interface, host, port) pane is intended for the network parameters of the output stream. The Interface drop-down list contains all available network interfaces. The Destination host (multicast or unicast IP address), port are editable text fields. AirX broadcast automation supports both multicast and unicast streaming.

RTSP Output

First step: call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **RTSP (Real Time Streaming Protocol)** output stream type.

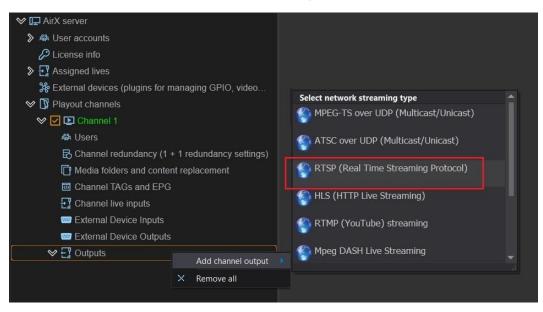


Figure 107. Add RTSP (Real Time Streaming Protocol) channel output

After RTSP is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.



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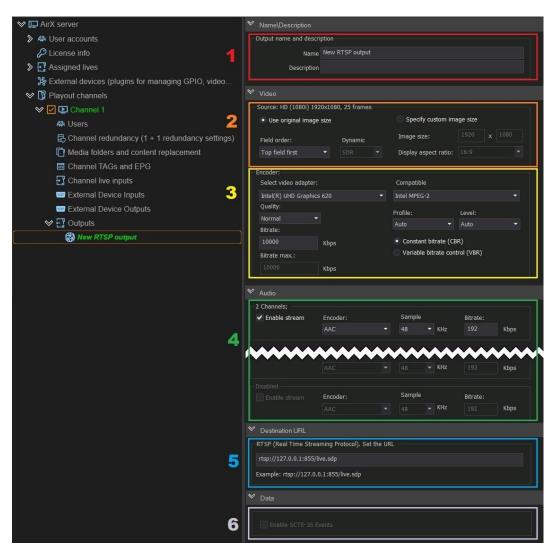


Figure 108. RTSP Output settings

- Editable Name/Description fields. The Name field is required; it has the "New RTSP output" default value, but can be changed manually. The field Description is optional.
- The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel, the Output belongs to. In this guide, the HD channel is used as an example, so the header will be Source: HD(1080i) 1920x1080, 25 frames.

The field contains two checkboxes:

- **Use original image size**. Remain the image size and aspect ratio unchanged. After checking the box, the remaining options of the field will become available: the **Field order** drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first. For RTSP output, the default is Top field first.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

 Specify custom image size. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.



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- 3. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate), these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4 compression in accordance with the DVB standard. High is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.
 - **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
 - Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 4. The **Audio** pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3), sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).
- 5. The **Destination URL** pane is intended for the network parameters of the output stream. The **RTSP (Real Time Stream Protocol). Set the URL** text field is editable; the value has to be entered manually.
- 6. The **Data** pane contains the **Enable SCTE-35 Events** checkbox for SCTE-35 AD markers insertion to the output stream.

HLS Output

First step: call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **HLS (HTTP Live Streaming)** output stream type.

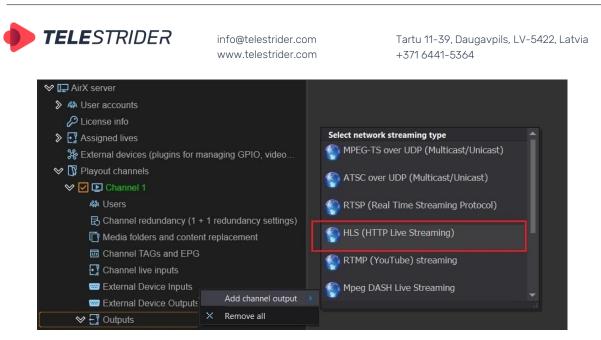


Figure 109. Add HLS (HTTP Live Streaming) channel output

After HLS is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

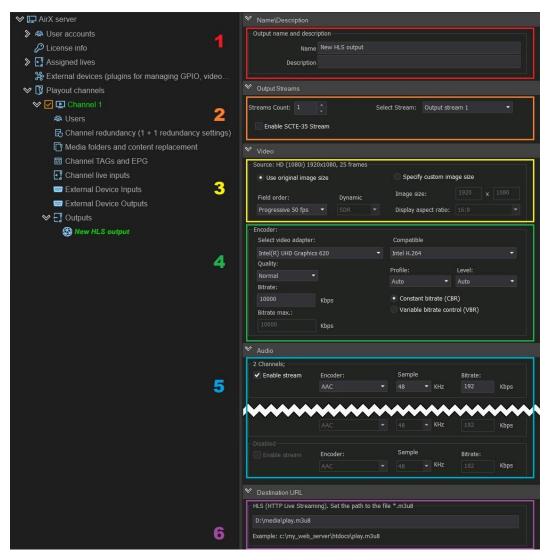


Figure 110. HLS Output settings



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- Editable Name/Description fields. The Name field is required; it has the "New HLS output" default value, but can be changed manually. The field Description is optional.
- 2. The **Output Streams** pane is intended to the output stream selection. The pane contains the adjustable **Stream Count** parameter, which shows the number of HLS streams, broadcasting simultaneously by the broadcast playout server. You have to set the **Stream Count** and then select the stream you want to use from the **Select Stream** drop-down list.

In addition the Output Stream pane contains the **Enable SCTE-35 Events** checkbox for SCTE-35 AD markers insertion to the output stream.

3. The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel, the Output belongs to. In this guide, the HD channel is used as an example, so the header will be Source: HD(1080i) 1920x1080, 25 frames.

The field contains two checkboxes:

Use original image size. Remain the image size and aspect ratio unchanged.
 After checking the box, the remaining options of the field will become available: the Field order drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first. For HLS, the default is Progressive 50 fps.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

- Specify custom image size. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.
- 4. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate), these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4



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compression in accordance with the DVB standard. **High** is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.

- **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
- Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 5. The **Audio** pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3), sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).
- 6. The Destination URL pane is intended for the network parameters of the output stream. You have to set the path to the folder, containing the HLS chunks. The HLS (HTTP Live Streaming). Set the path to the file *.m3u8 text field is editable; the value has to be entered manually.

RTMP Output (YouTube streaming)

Call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **RTMP (YouTube) Streaming** output stream type.

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۶ ♣ User accounts			
🔑 License info			
Assigned lives			
券 External devices (plugins fo	r managing GPIO, video		
🛇 🛐 Playout channels			
🛇 🗹 💽 Channel 1			
All Users		Select network streaming type	
🗟 Channel redundancy (1 + 1 redundancy settings)	MPEG-TS over UDP (Multicast/Unicast)	
T Media folders and con	tent replacement	ATSC over UDP (Multicast/Unicast)	
Channel TAGs and EF	PG		
🛃 Channel live inputs		🚳 RTSP (Real Time Streaming Protocol)	
📟 External Device Inputs			
📟 External Device Outpu	ıts	HLS (HTTP Live Streaming)	
E Outputs		RTMP (YouTube) streaming	
	Add channel output 🔹		
		Mpeg DASH Live Streaming	

Figure 111. Add RTMP channel output

After RTMP is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

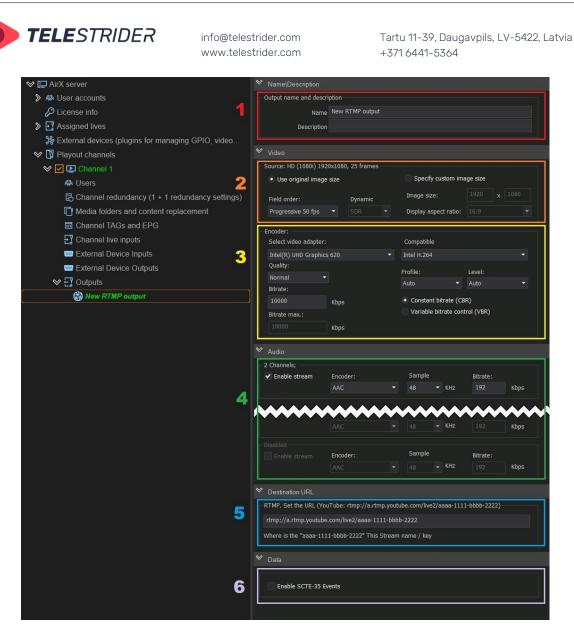


Figure 112. RTMP Output settings

- Editable Name/Description fields. The Name field is required; it has the "New RTMP output" default value, but can be changed manually. The field Description is optional.
- The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel, the Output belongs to. In this guide, the HD channel is used as an example, so the header will be Source: HD (1080i) 1920x1080, 25 frames.

The field contains two checkboxes:

 Use original image size. Remain the image size and aspect ratio unchanged. After checking the box, the remaining options of the field will become available: the Field order drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first. For RTMP output, the default is Top field first.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

Specify custom image size. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.



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- 3. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate), these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4 compression in accordance with the DVB standard. High is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.
 - **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
 - Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 4. The Audio pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3), sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).
- 5. The **Destination URL** pane is intended for the network parameters of the output stream. The **RTMP. Set the URL (YouTube ...)** text field is editable; the value has to be entered manually.
- 6. The **Data** pane contains the **Enable SCTE-35 Events** checkbox for SCTE-35 AD markers insertion to the output stream.

Mpeg DASH Output

Call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **Mpeg DASH Live Streaming** output stream type.

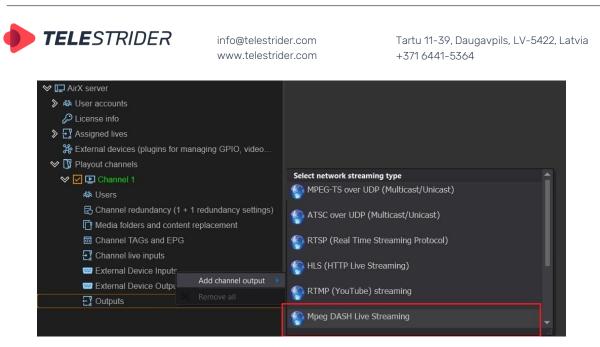


Figure 113. Add Mpeg DASH channel output

After Mpeg DASH is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

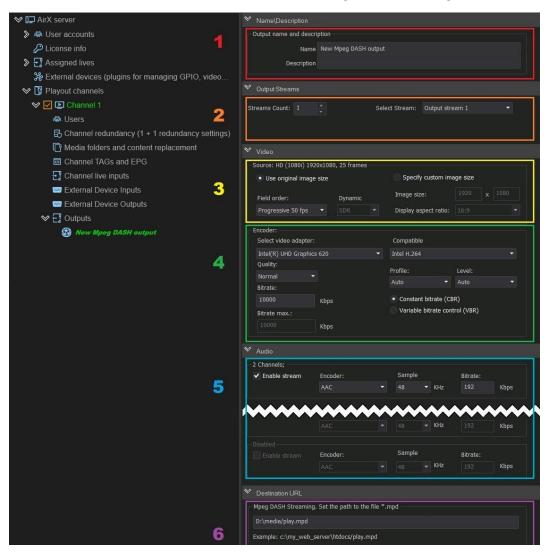


Figure 114. Mpeg DASH Output settings



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- Editable Name/Description fields. The Name field is required; it has the "New Mpeg DASH output" default value, but can be changed manually. The field Description is optional.
- 2. The **Output Streams** pane is intended to the output stream selection. The pane contains the adjustable **Stream Count** parameter, which shows the number of Mpeg DASH streams, broadcasting simultaneously by the broadcast playout server. You have to set the **Stream Count** and then select the stream you want to use from the **Select Stream** drop-down list.

In addition the Output Stream pane contains the **Enable SCTE-35 Events** checkbox for SCTE-35 AD markers insertion to the output stream.

The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel, the Output belongs to. In this guide, the HD channel is used as an example, so the header will be Source: HD(1080i) 1920x1080, 25 frames.

The field contains two checkboxes:

- **Use original image size**. Remain the image size and aspect ratio unchanged. After checking the box, the remaining options of the field will become available: the **Field order** drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first. For Mpeg DASH output, the default is Progressive 50 fps.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

- Specify custom image size. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.
- 4. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate), these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4



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compression in accordance with the DVB standard. **High** is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.

- **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
- Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 5. The **Audio** pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3), sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).
- 6. The Destination URL pane is intended for the network parameters of the output stream. You have to set the path to the folder, containing the video chunks. The Mpeg DASH Streaming. Set the path to the file *.mpd text field is editable; the value has to be entered manually.

SRT Output. Caller/Listener modes.

Secure Reliable Transport (SRT) is a data transfer protocol based on UDT (UDPbased Data Transfer Protocol). SRT uses a "handshake" mechanism of bidirectional data transfer; each device must be identified as either a Caller or a Listener.

A device in Caller mode is the initiator of an SRT streaming session. The Caller device must know the public IP address and port number of the device identified as the Listener. If the stream source device is set to Caller mode, the broadcast will not start until a point-to-point connection with the receiver set in Listener mode.

The device in Listener mode is waiting for a request to start an SRT streaming session. A device identified as a Listener has only to know that it must listen to an SRT stream on a specific port. If the stream source device is set to Listener mode, the receiver set in Caller mode sends a request to receive the stream. In this case, there can be several receiving points.

Briefly:

- Listener Source the receiver set in the Caller mode sends a request to receive the stream, there can be several receiving points.
- Caller Source Broadcasting will not start until a point-to-point connection with the receiver set in Listener mode.

SRT Output settings

Call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **SRT (MPEG-TS DVB) streaming** or **SRT (MPEG-TS ATSC) streaming** output stream type.

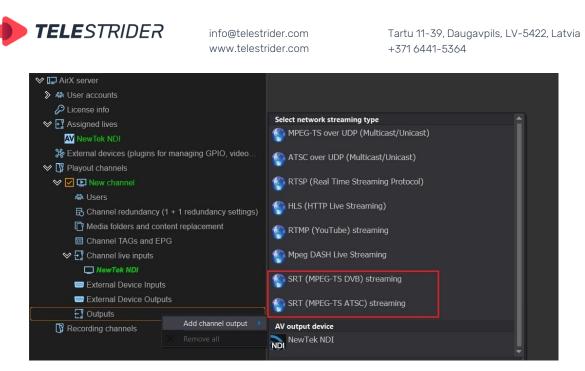


Figure 115. Add SRT (MPEG-TS DVB or ATSC) channel output

After SRT is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.



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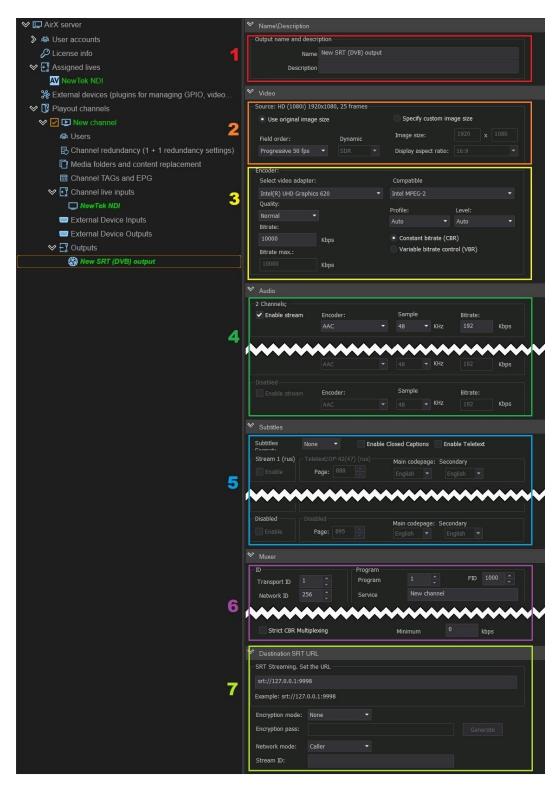


Figure 116. SRT Output settings

- Editable Name/Description fields. The Name field is required; it has the "New SRT (DVB/ATSC) output" default value, but can be changed manually. The field Description is optional.
- The Video pane, the Source field. This field contains the parameters of the output video, such as image size or fps. The header of the field indicates the format of the playout channel, the Output belongs to. In this guide, the HD



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

channel is used as an example, so the header will be **Source: HD (1080i) 1920x1080, 25 frames**.

The field contains two checkboxes:

 Use original image size. Remain the image size and aspect ratio unchanged. After checking the box, the remaining options of the field will become available: the **Field order** drop-down list - Progressive 50 fps, Progressive 25 fps, Top field first.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

- Specify custom image size. The image size of the output stream can be set manually. After checking the box, the **Image size** fields become available as well as the **Display aspect ratio** drop-down list, containing values 4:3 and 16:9.
- 3. The **Video** pane, the **Encoder** field. This field contains the parameters of the output stream encoding.
 - Select video adapter. You can select one of the installed video adapters or use the CPU (Software renderer) to encode the output stream. If you use several video adapters, remember the rule of resource allocation - the input stream, playout channel and output stream (streams) for each channel must use the same one video adapter (see Predicting GPU performance. Throughput optimization and resource allocation on GPUs chapter).
 - Compatible drop-down contains a list of available codecs. ATTENTION! The AirX software has the built-in protection that will not allow you to use an incompatible codec. When you select a video adapter, only available codecs will be displayed in the Compatible drop-down list. In addition, only changeable settings fields will be activated. If the codec does not allow changing the properties (like aspect ratio, field order, profile, level or bit rate), these fields will be blocked!
 - Quality encoding quality settings. Available values: Speed (for encoding speed priority), Normal, High Quality, Very High Quality (resource-intensive modes for encoding quality priority).
 - Profile drop-down list contains Auto, Simple, Main and High values to select an encoding profile. The profile defines the set of features that will be used by the codec during the encoding process. The various profiles are intended for different types of applications that work with video files and video streams. Auto is used for automatic selection of encoding profile. Simple is for applications that are undemanding to image quality and has additional loss tolerance, mainly used in mobile apps. Main is used mainly in standard definition digital television and TV broadcasts using MPEG-4 compression in accordance with the DVB standard. High is the main one for digital broadcasting and video, especially for high-definition television, used for Blu-ray video disc and DVB HDTV.
 - **Level** sets the required decoder performance for the selected profile (the max. image resolution, frame rate and bit rate for the decoder).
 - Bitrate checkboxes to select a Constant bitrate (CBR) or Variable bitrate control (VBR). When CBR is selected, the default value is 10000 Kbps. VBR checkbox activates the Bitrate max window, which allows you to limit the maximum bitrate.
- 4. The **Audio** pane contains audio settings for the output stream. AirX software supports up to 8 output stereo pairs. Each stereo pair can be independently configured with codec (AAC, MPEG1 LayerII, MPEG2 LayerII, ATSCA/52A(AC-3),



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

sampling frequency (48KHz or 44.1KHz) and bitrate (value must be entered manually).

5. The **Subtitles** pane contains subtitle settings for the output stream. AirX software supports up to 8 multilingual subtitle streams for each channel output at the same time.

Select the **Subtitle Format** in the drop-down list (None, DVB, EBU-TT) to enable DVB subtitles. The **Enable** checkboxes will be automatically activated. Check the boxes you want to use. The number of subtitles streams available for activation depends on the basic settings of the playout channel.

🛇 🖵 AirX server	Subtitles					
> 錄 User accounts	Stream	Enabled	Lang:	eng	Hard Subtitles	File SR
License info	Stream		 Lang: 			File Sk
				es		
	Stream		 Lang: 			
😵 Web url	Stream		 Lang: 			
AV NewTek NDI	Stream		Lang:			
₩ External devices (plugins for managing GPIO, video	Stream		 Lang: 			Edit te
♥ 🛐 Playout channels	Stream		 Lang: 			Warning! Text
V I INew channel	Stream		 Lang: 			apply after rest
معرف المعرفة ال						
Channel redundancy (1 + 1 redundancy settings)	♥ Channel1	folders				
 Image: Barbon Ba	✓ Subtitles	~~~~	~~	~~	~~~~	~~~~
External Device Inputs	Subtitles	DVB	-	Eash	Closed Caption	s 📃 Enable Tele
External Device Outputs					e cioseu calition	
Soutputs	Stream 1 ((eng)	Main co lepa	ge: Secondary
Rew SRT (DVB) output	🖌 Enable	Page:			English	English
Sa New SRI (DVB) output	Stream 2 (es) _ Teletext/C		(es)—	Main codena	ge: Secondary
	🗸 Enable	Page:			English	English
	Disabled	Disabled			Main codepa	ge: Secondary
		Page:				

Figure 117. The subtitles output settings (SRT stream)

Check the box **Enable Closed Captions** if you want to use them. The **Enable** checkboxes will be automatically activated for all the available subtitles streams. Check the boxes you need.

The enabling of teletext is similar: check the box **Enable Teletext** and select the streams you need, as described above. After selecting the subtitles streams, you have to specify teletext pages in the **Teletext/OP-42(47)** field. The default value is 888, you can change it manually. And finally, select the Main and Secondary codepages languages from the drop-down lists.

- 6. The Muxer pane contains multiplexer settings for multistream IP transmission. Changing any settings in the Muxer pane requires a high-level of user competence, in assistance with the technical documentation. Please do not change these settings unless necessary.
- 7. The **Destination SRT URL** pane is intended for the network parameters of the output stream and encryption settings. Enter the destination URL in the **SRT Streaming. Set the URL** field. Select the **Encryption mode** in the drop-down list - AES-128 or AES-256. Click **Generate** to generate an encryption key. This key will be required to decode the stream signal on the receiving side.

Select the Caller/Listener mode in the **Network mode** drop-down list. When choosing the Caller mode, enter a unique Stream ID to the editable field located at the bottom of the settings pane.



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

> ♣ User accounts	♥ Muxer	
License info	ID Program	
✓ T Assigned lives	Transport ID 1 Program	1 <u>*</u> PID 1000 <u>*</u>
🕰 Web url	Network ID 256 🔶 Service	New channel
AV NewTek NDI	Provider	
Sexternal devices (plugins for managing GPIO, video	Network na	ame
♥ IP Playout channels	Suream PID	
✓ ✓ IN New channel	Video 1001 🐥	Disable video stream
A Users		
Channel redundancy (1 + 1 redundancy settings)	Audio 1 1002 🔹 Audio 3 1004 🔹	Audio 5 1006 🔶 Audio 7 1008 🔶
Media folders and content replacement	Audio 2 1003 🛕 Audio 4 1005 🚖	Audio 6 1007 🔶 Audio 8 1009 🌻
Channel TAGs and EPG		
> T Channel live inputs	Subs 1 1010 + Subs 3 1012 +	Subs 5 1014 + Subs 7 1016 +
External Device Inputs	Subs 2 1011 * Subs 4 1013 *	Subs 6 1015 + Subs 8 1017 +
📟 External Device Outputs		1
	SCTE-35 Stream PID 1200	
😪 New SRT (DVB) output	Teletext Stream	4
5	Enable Stream PID 1020	
		<u></u>
6	EPG text encoding Default (UTF-8)	
6		
7	Strict CBR Multiplexing	Minimum ⁰ kbps

Figure 118. SRT Muxer settings

- 1. The **ID** pane contains the **Transport ID** field to identify the package and the **Network ID** field to identify the network.
- 2. The **Program** pane contains: the **Program** field for identifying the program number in the transport stream, the **PID** field, the **Service**, **Provider** and **Network name** editable text fields. You can modify these text fields.
- 3. The Stream PID pane contains the Disable video stream checkbox to disable video data transmission (to hold only audio and/or service data in the output stream), as well as fields for specifying the PIDs with video data, audio data and subtitles. Changing any settings in Stream PID pane requires a high level of user competence and experience with the transport stream structure! We strongly recommend you do not change the settings of the Stream PID pane.
- 4. The **SCTE-35 Stream** field contains the **Enable Stream** checkbox for insertion of SCTE-35 AD markers and a field to select the PID with SCTEs. We recommend do not change the default PID value.
- 5. The **Teletext Stream** field contains the **Enable Stream** checkbox to enable teletext insertion and a field to select the PID number containing the teletext data. We recommend do not change the default PID value.
- 6. The **EPG text encoding** field allows you to select the EPG encoding. The default value is UTF-8.
- 7. The **Strict CBR Multiplexing** checkbox allows you to set the multiplexing mode with a fixed bit rate and set the **Minimum** bit rate.

NDI Output

Call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **NDI** output stream type.

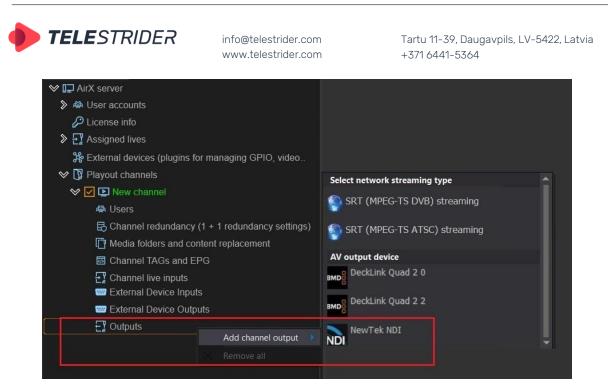


Figure 119. Add NDI channel output

After NDI is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

♥ I⊒ AirX server	❤ Name\Description
	Output name and description
🔑 License info 🗧 👖	Name New channel AV output
Stress Stres	Description
🍪 Web url	Output device NewTek NDI
AV NewTek NDI	
🎇 External devices (plugins for managing GPIO, video	♥ Video\Audio
🛇 🕼 Playout channels 🧊	NewTek NDI output name NewTek NDI group
♥ ♥ New channel	NewTekNDI
& Users	Available resolutions Dynamic Range
🗟 Channel redundancy (1 + 1 redundancy setting	HD (1080p) 1920x1080, 50 fram 🔹 SDR 👻
Media folders and content replacement	Format of the channel and ouput format of AV card MUST MATCH! Assign format for the card
Channel TAGs and EPG	matching to the channel format (if available) or change format of the channel.
Channel live inputs	Output audio matrix
📟 External Device Inputs 4	Output audio matrix settings Enable SCTE-104 Events
📟 External Device Outputs	
🛇 🛃 Outputs	♥ Subtitles
AV New channel AV output	Subtitles Teletext/OP-42(47) Main codepage: Secondary Closed Captions
6	Enable Page: 888 English Engl
	Disabled Main codepage: Secondary
	Enable Page: 890 English 🔹 English 🔹 Enable stream

Figure 120. NDI Output settings

- Editable Name/Description fields. The Name field is required; it has the "New channel AV output" default value but can be changed manually. The field Description is optional.
- 2. The **NewTek NDI output name** and **NewTek NDI group** text fields are editable and can be changed manually.
- 3. In the Available resolutions pane you can select the output video encoding resolution from the drop-down list. You can remain the image size and fps unchanged or downscale them. The Dynamic option for color space selection



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

(SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

4. The **Output audio matrix** additional window is intended for customization of the output audio matrix. AirX software supports up to 24 audio tracks in output. Each track can be configured independently.

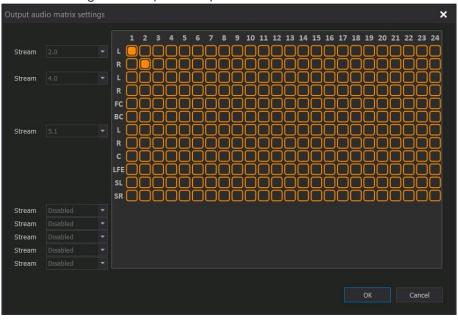


Figure 121. Output audio matrix settings

- 5. The **Enable SCTE-104 Events** checkbox is intended for SCTE-104 AD markers insertion to the output stream.
- 6. The **Subtitles** pane contains subtitle settings for the output stream. AirX software supports up to 8 multilingual subtitle streams for each channel output at the same time. The **Enable** checkboxes must be activated manually. Check the boxes you want to use. The number of subtitles streams available for activation depends on the basic settings of the playout channel.

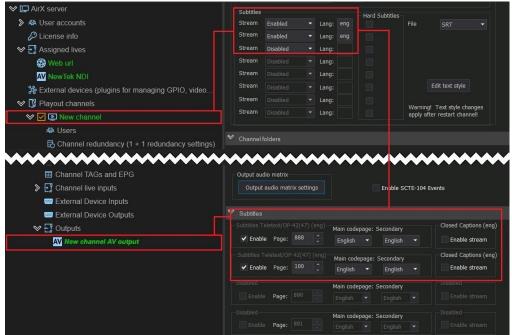


Figure 122. The subtitles output settings (NDI stream)



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

Check the boxes **Enable stream** in the **Closed Captions** pane for each stream, you want to use.

The enabling of teletext is similar: check the boxes **Enable** for the streams you need. After selecting the subtitles streams, you have to specify teletext pages in the **Teletext/OP-42(47)** field. The default value is 888, you can change it manually. And finally, select the Main and Secondary codepages languages from the drop-down lists.

SDI Output

If you have an AV capture card installed, you will see its outputs in the list of available AirX output devices.

Call the context menu of the **Outputs** branch of the Channel resource tree (left pane of the application window). Select **Add channel output** in the drop-down menu, and click the **SDI** output stream type. Select one of the installed AV capture cards and the output, you want to use.

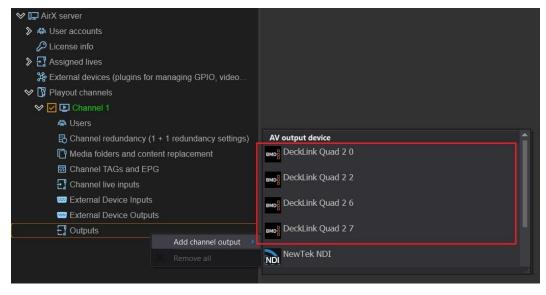


Figure 123. Add SDI channel output

After SDI is added to the Channel Outputs list, you have to configure the parameters of the output stream. Click the Output name in the Channel resource tree (left pane of the application window) to see the Settings pane on the right.

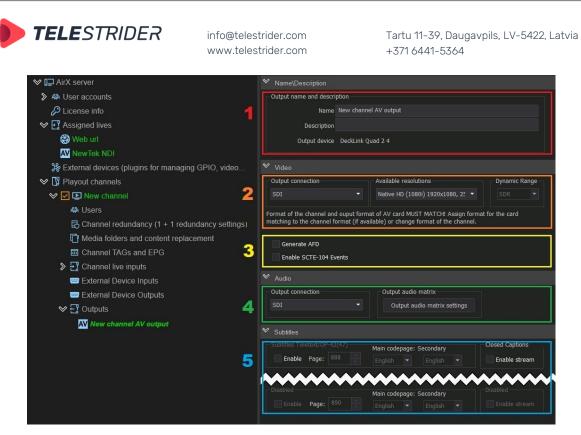


Figure 124. SDI Output settings

- Editable Name/Description fields. The Name field is required; it has the "New channel AV output" default value, but can be changed manually. The field Description is optional. In addition, the Name/Description pane contains the information about the connected AV device.
- 2. The **Video** pane, the **Output connection** field contains the drop-down list that has the default value SDI.

In the **Available resolutions** pane you have to select the output video encoding resolution from the drop-down list. Format of the playout channel and output format of AV card must match! Assign format for the card matching to the channel format (if available) or change format of the channel.

The **Dynamic** option for color space selection (SDR, HDR HLG) becomes available only if the HDR HLG color space is selected in the playout channel settings.

- 3. The additional service data pane. The section contains a checkbox Enable SCTE-104 Events, enabling the SCTE-104 markers insertion to the output signal. The Generate AFD enables the AFD insertion to the output signal (Active Format Description (AFD) is a standard set of codes that can be sent in the baseband SDI video signal that carries information about the aspect ratio and other active picture characteristics.)
- 4. The **Audio** pane, the **Output connection** field contains the drop-down list that has the default value SDI.

The **Output audio matrix** additional window is intended for customization of the output audio matrix. AirX software supports up to 24 audio tracks in output. Each track can be configured independently.



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

Output auc	lio matrix settir	ngs																									×
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Stream			L R												D	D		Q								D	
Stream			L	Ŭ	ŏ	ğ	ğ	ŏ	č				Ŭ	ğ	ğ	ğ	ğ	ğ	ğ	ŏ	ŏ	ŏ	ŏ	ğ	ğ	ğ	ğ
			R FC		P			P						B	B	D		Q					O			Р	
			BC		Ď	ğ	ğ	ŏ						ğ	ğ	ğ	ğ	ğ	ŏ	ğ	ŏ	ğ	ğ	ğ	ğ	ğ	ğ
Stream			L R			Q	O							B	R	B	R	Q	Q					B		B	
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			LFE		R										Р		R	Р	Q			R				Р	
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Stream																											
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Stream																											
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Figure 125. Output audio matrix settings

5. The **Subtitles** pane contains subtitle settings for the output stream. AirX software supports up to 8 multilingual subtitle streams for each channel output at the same time. The **Enable** checkboxes must be activated manually. Check the boxes you want to use. The number of subtitles streams available for activation depends on the basic settings of the playout channel.

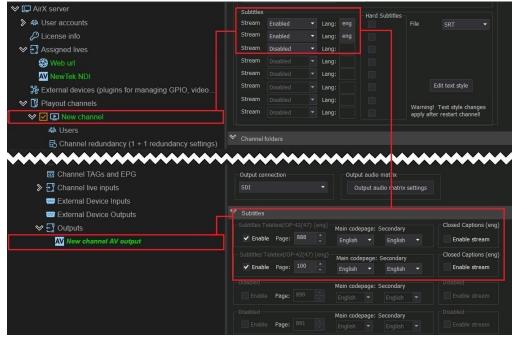


Figure 126. The subtitles output settings (SDI stream)

Check the boxes **Enable stream** in the **Closed Captions** pane for each stream, you want to use.

The enabling of teletext is similar: check the boxes **Enable** for the streams you need. After selecting the subtitles streams, you have to specify teletext pages in



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

the **Teletext/OP-42(47)** field. The default value is 888, you can change it manually. And finally, select the Main and Secondary codepages languages from the drop-down lists.

LOG files - definition & overview

How to: View and save log files

A log file is a computer-generated data file that contains information about system usage, activities, and operations within an AirX system and applications. Log files are the primary data source for the technical support.

The AirX broadcast automation system stores the log files in several locations:

1. Server logs are located in the folder, specified in the server settings.

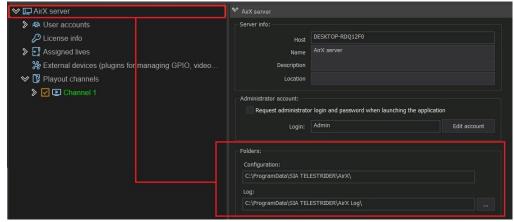


Figure 127. AirX server logs location

2. Channel logs are located in the folders, specified in the each playout channel settings.

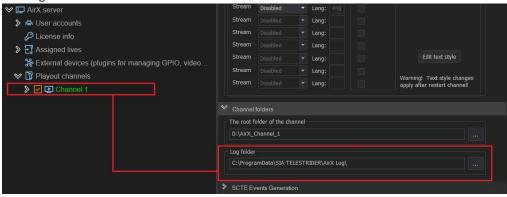


Figure 128. AirX channel logs location

Location of the each specified folder can be changed by the user.

Use the **Export** button in the main menu of AirX Control app to collect an archive with all log files:

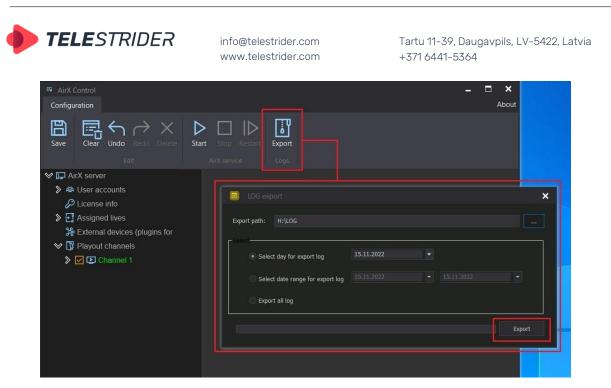


Figure 129. LOG export

Specify the folder to save an archive in the **LOG export** window.

This window also provides the selection of a period for logs exporting: for the current day, for a date range, or export of all logs available on the server for the entire time. Check the box you need and click **Export** to save the archive file in the specified folder.

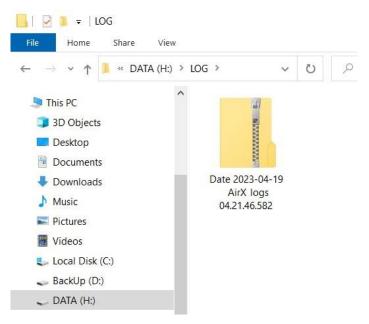


Figure 130. AirX logs archive

System monitoring tools

Troubleshooting and Initial Diagnosis

AirX broadcast automation has built-in initial diagnostic tools. First, you can start a **Preview** of any playout channel from the AirX Control app interface at any time.



Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364

Call the context menu of the playout channel in the Server resource tree (left pane of the application window) and select **Preview** from the drop-down list to open the preview in an additional window:

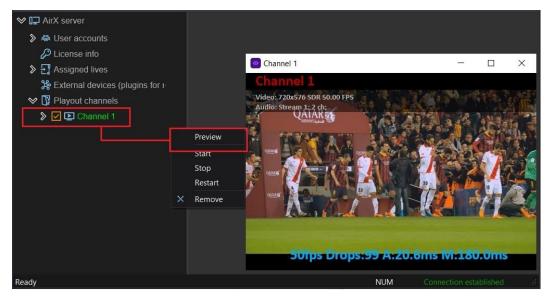


Figure 131. Channel preview

Press the keyboard shortcut **Ctrl+F7** to show the frame counter in the lower right corner of the screen. Counter will show the current stream status and the number of dropped frames. In the upper left corner of the preview window, you will see the characteristics of the channel stream: Channel name, video format, color space, fps, and number of audio tracks. Preview display and input stream monitoring are performed in real time.

In addition to previews, AirX playout channels are color-coded for channel status.

Color coding is a visual reminder system to alert and inform users. AirX broadcast automation assigns specific meanings to certain colours; therefore, colours can be a warning or give information.



Figure 132. Playout channels color codes

1. Green – The channel is ok, it works correctly.



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2. Red – The channel is active but stopped (manually or due to an internal error). If the channel was stopped manually, you may try to start it. Call the context menu of the playout channel in the Server resource tree (left pane of the application window) and select **Start** from the drop-down list.

If the channel does not start, most likely there is an error in the channel settings. Try to check the configuration settings, connected live sources settings and output stream settings.

A channel can be stopped by many reasons like configuration error, lack or failure of the server hardware, expiration of a license, etc. If you cannot find the cause of the malfunction on your own, contact the Telestrider technical support service.

3. Orange - The channel is idle (inactive). You will see an orange color code in two cases: The channel is underconfigured (click **Save** in the main menu of AirX Control app to save the channel settings and start the channel services) or the channel is excluded from a playout configuration. In this case, there will be no activated check mark next to the channel name.

The same color indication is valid for the output streams. They can be color-coded with green (the output stream is ok, it works correctly) and red (troubleshooting is required).

Support

You can contact with Telestrider technical support team by email support@telestrider.com or phone +37164415364 (Latvia)

If you prefer an email, summarize your request in the subject line. In the body of the email, please give the following information:

- 1. Your complete user info including name, company, email.
- Name, version and edition of product. Example: AirX Play, product version: 5.6.89.48510
- 3. License Info: Key ID of your license key file and HW ID. This is required for our issue tracking system and enables us to provide prompt support.
- 4. OS Version & Platform including Service Pack: example: Windows 10 Pro x64. SPx.
- 5. If your server was purchased as In-a-box from Telestrider, please include the server serial number. The number is the computer name, which you can find in the system properties (looks like SL50055) or on the server case.
- 6. Description of the problem: Include as much info as possible, especially steps to reproduce the issue. This will allow us to understand your problem more quickly.
- 7. Screenshots or videos illustrating the error may help a lot in troubleshooting!
- LOG archive. When an error or malfunction occurs on your broadcast playout server, the details of it are recorded and saved to a log file. Logs can provide the support team enough information to diagnose and resolve the error. To share logs with the support team follow the instructions described in LOG files definition & overview chapter.

Be ready to give a technical support specialist remote access to the server. Access options - RDP, AnyDesk, TeamViewer.

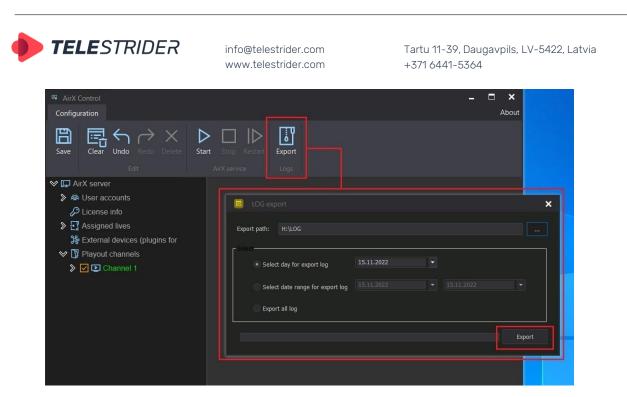


Figure 133. LOG export

600000000008888888	AirX num Media_Copy	(0/5)		1
60000000000088888888 State: Connected! The license was issued: 09.02.2022 14:20:43 Local hardware id: DC597CDC597 DC5978 DC597CDC597 DC5978 DC597CDC597 DC5978 597CD	num WEB_IP_Outp num TS_IP_Output num ADV_DETECT num SUBS_TRACK num HD_channels num AV_Outputs num UHD_channels num SD_channels num SD_channels num Loudness (0/5 num REMOTE_CO num Ext_device_ev num Live_Fill_Key num ADV_INCERT num ST2110 (0/5 num HARDSUBS_c num Schedule_Res	outs (0/5) s (0/5) r (0/5) (0/5) s (0/5) s (0/5) s (0/5) output ((0/5)	

Figure 134. License key ID, HW ID

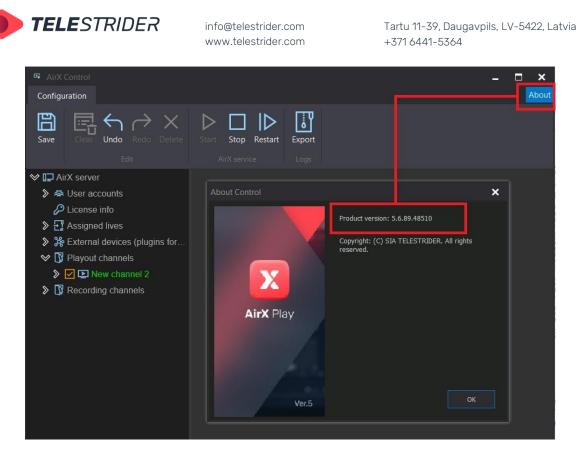


Figure 135. Product version

Client-side component installation

Since the AirX software has client-server architecture, the installer must be downloaded to both the broadcast playout server and the client workstation.

Preparing for installation (Client-side). Hardware requirements

Requirements for supported operating systems:

- "Windows 10" x64;
- "Windows Server 2019" x64;
- Local Admin Rights.

Minimum hardware requirements:

- "Intel Core i5 gen 8" or higher;
- At least 8 GB of RAM;
- "Intel UHD Graphics" or "NVIDIA" supporting "DirectX 11" or higher;
- Monitor with a screen resolution of 1920x1080 or more;
- Audio playback system.

Note: It is recommended to install two monitors: a monitor with a screen resolution of 1920x1080 or more for the client workplace, and SDI monitor to control the quality of live sources.



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Client-side component installation

For installation of the AirX software, it is necessary to check the readiness of hardware and Login into PC's operating system with Admin rights

Then execute the AirX installer file, you received from Telestrider technical support team.

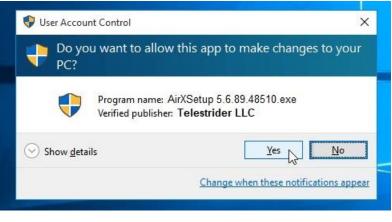


Figure 136.User Account Control

Next, the installation wizard window will open with the license agreement. Choose the language and read the Licence terms and conditions.

X AirX Solution ×					
Welcome 🛛 🔀 AirX Play					
1. The license provided by the Licensor under the present Agreement includes the following ways and volume of use of the Software:					
1.1. To make installations of the Software on the COMPUTER (to create backup copies of the Software copy installed on the COMPUTER) only for its application within the transferred right.					
1.2. To reproduce (to apply) the Software in the form of an object code by record in random access memory of the COMPUTER for the purpose of direct execution of instructions of the Software in the COMPUTER central processor, provided that simultaneous application of two and more copies of the Software on one COMPUTER is forbidden.					
1.3. To apply at the same time or at different times, in common or separately, the Software installed on different COMPUTERS, copies in quantity and a functional purpose determined respectively by quantity transferred under the present Agreement.					
1.4. To make copies of record of contents of the Software on the carriers providing long-term safe data storage in quantity transferred under the present Agreement.					
Select language: English 🔹					
I agree to the License terms and conditions					
CANCEL BACK NEXT					

Figure 137. License terms and conditions



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After reading, check the box to agree to the terms and click **Next**.

WARNING: if you do not agree with the License terms please terminate the installation by **Cancel** button.

The following interface will give you options to install the components.

X AirX Solution		x
Component sel	ection 🛿	🛛 AirX Play
Select components to install License Server License Server License Server License Server License Server AirX documentation NTP client AirX servers AirX clients AirX Subtitle Creator AirX Record server AirX Record client		
CANCEL	BACK	NEXT

Figure 138. Component selection

License Server performs the operation of the software components in accordance with the purchased licenses. For the detailed description of setting up the License Server, see the **License** chapter.

AirX v.NN – broadcast automation system components, including:

- AirX documentation self-explanatory
- NTP client provides synchronization of the broadcast playout server and the client application with NTP server. By default, AirX is synchronized with system time of the server
- AirX servers software components, necessary for the operation of the broadcast playout server
- AirX clients software components for a remote client application.
- AirX Subtitle Creator built-in subtitle creation tools
- AirX Record server software components of the AirX recording server
- AirX Record client software components for a remote recording client application



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Check the boxes shown in Figure 138 to install AirX on a broadcast playout server: AirX documentation (optional), AirX clients and AirX Subtitle Creator. The AirX v.NN box will be checked automatically. Then click **Next**.

In next window you will see a list of components, selected for installation:



Figure 139. Selected components

Click **Back** to make changes to the list of components, Click **Next** to confirm the installation of the components. The installation progress will be shown in the same window.

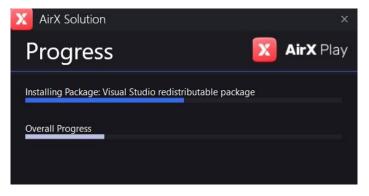


Figure 140. Installation progress

After the installation process is complete, you will be prompted to launch the AppLauncher application to configure services and close the installer window.

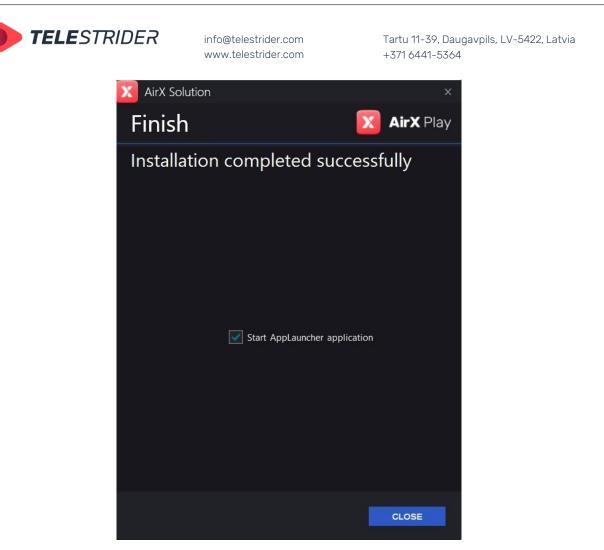


Figure 141. Installation completed

After closing the installation app, you will see desktop shortcuts:



Figure 142. AirX shortcuts

User applications

AirX Launcher is a client workplace application for broadcast playout servers and playout channels addition and launching. This configurator allows you to launch the applications for the playout channel's schedule managing, for CG creation and for subtitles editing.

Channel Manager is the main scheduling application. It allows you to create an OnAir schedule manually or work with a schedule downloaded from a third-party source (broadcast traffic management system). Also, the Channel Manager allows the GC insertions and AD insertion markers processing.



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Scene Editor is a built-in CG editor for creation of on-air graphic design scenes and/or graphics conversion to the internal graphic scene format for AirX software. It allows you to operate with CG of various levels of complexity from a simple overlay of a static logo to a multilayer dynamic design using PIP, FILL + KEY, RSS, etc.

Subtitles Creator - built-in subtitle editor

AirX Launcher

Authorization, launch, start interface

Double click on the AirX Launcher icon on your desktop to get started with AirX.

When you start the program, an authorization form will be opened. Enter the Login and Password you specified in the **User Accounts** branch of the Server resource tree (see the AirX Control app, **Users** chapter), or use the default Login and Password (Admin; 12345).

uthorization			×
Login: Password:	admin		•
			Cancel
	Login:	Login: admin	Login: admin Password:

Figure 143. Authorization

In the new **vpAppLauncher** window you will see the only one (but important) settings button. Click this button to open the **User configuration** popup window.



Figure 144. User configuration



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In addition you can change the user in the **vpAppLauncher** window (call the authorization form again). Right-click the main menu of the app window and select **Logout** in the drop-down list to disable the current user. Or select Login to change the user without disabling the current one.

The third item of the drop-down list (Edit user configuration) is similar to the settings button and will call the **User configuration** pop-up window



Figure 145. Change user

Another way to change the User is to click the avatar picture in the **vpAppLauncher** window and call the authorization form again.

If you want to change a user avatar, you have to open the User configuration window, select the **User: Username** line and call the context menu. In the dropdown list, select the **Set user avatar** item and assign the picture you want to use as the avatar.

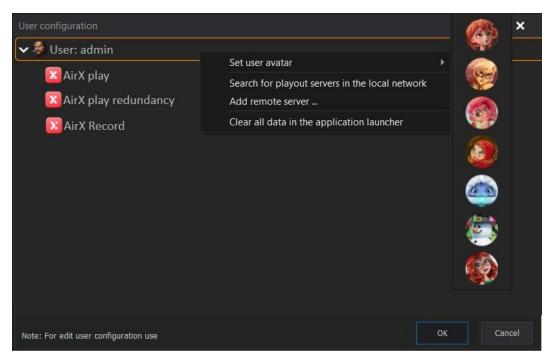


Figure 146. Set user avatar

AirX AppLauncher configuration and setup

There are two possible ways to add playout channels to the AirX Launcher interface.

Each playout channel is located on a particular broadcast playout server in the local network. Therefore, it is necessary to add the servers and channels to the configuration of the client workstation.



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1. Automatic search for playout severs

Open the **User configuration** window and select the top line **User: Username**. Call the context menu and click the **Search for playout servers in the local network** item.

User configuration			×					
Vser: Operator_1 AirX play AirX play redundancy AirX Record Query servers an Browse netwo		Set user avatar Search for playout servers in the local network Add remote server						
		nd channels rk servers. Please wait Cancel						
		Note: For edit user configu	ation use	OK Cancel				

Figure 147. Search for playout servers in the local network

After the search is complete, you will see all the servers available on the local network in the User configuration window.

At the end of the search process, the application window will be changed:

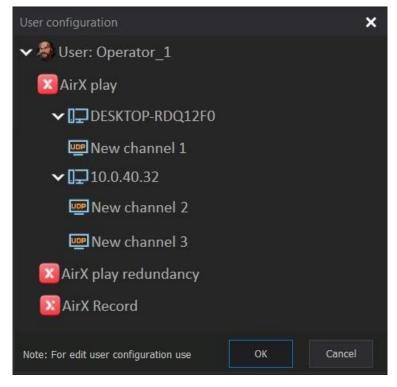


Figure 148. User configuration window with servers



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In Figure 148 you can see the two servers found. Click OK to add all servers and channels located on them to the AirX Launcher interface.

If you do not want to manage all playout channels from one client workstation, you have to exclude channels from the configuration. Call the context menu by clicking on the name of the playout channel you want to exclude. Select **Enable / Disable channel for use in the application launcher**. Checkbox means the channel is enabled, unchecked means the channel is disabled.

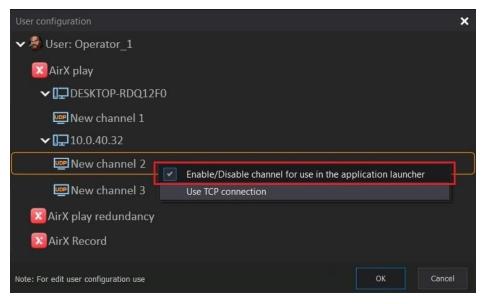


Figure 149. Enable / Disable channel for use in the application launcher

In addition, the AirX Launcher configurator allows you to manage not only playout channels but entire broadcast playout servers:

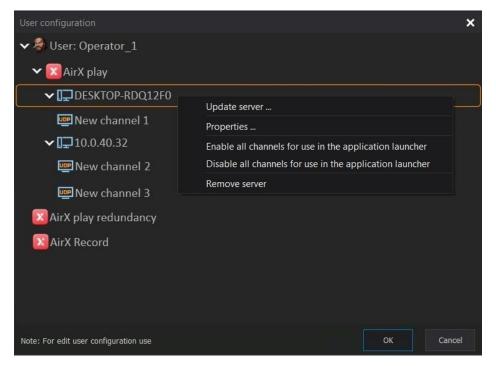


Figure 150. Enable / Disable all channels for use in the application launcher

The context menu of the server (name or IP) contains the following items:



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- **Update server** poll the server again, updating the channel configuration
- Properties edit the Name or IPs of the server (for example, in case of error in server name)
- **Enable all channels for use in the application launcher** all channels located on the selected server will be added to the AirX Launcher configuration.
- Disable all channels for use in the application launcher all channels located on the selected server will be excluded from the AirX Launcher configuration but the server will not be removed.
- **Remove server** the entire server will be removed from the configuration.

After configuration is complete, click OK to apply the changes.

ATTENTION: Use the **Clear all data in the application launcher** item of the user menu **User: Username** to clear the configuration.

2. Add remote servers manually

Open the **User configuration** window and select the top line **User: Username**. Call the context menu and click the **Add remote server** item.

User configuration			×
✓ [™] User: Operator_1 ✓ AirX play ✓ AirX play redundancy ✓ AirX Record	Set user avatar Search for playout server Add remote server Clear all data in the appl		
Remote server Enter server name or IP a 10.0.40.32 IP addre OK	dress:	Remote server Enter server nar SL03385 Serv	× ne or IP adress: er name OK Cancel
Note: For edit user configuration use			OK Cancel

Figure 151. Add remote server manually

In the new **Remote server** window enter the server's system name or IP of the server you want to add. Then click Ok to start search.

At the end of the search process, the application window will be changed:

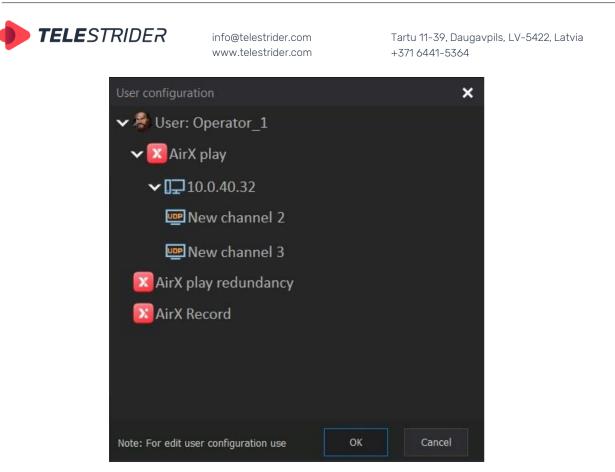


Figure 152. User configuration window with one server

Unlike the automatic search mode, you can only add one server at once in manual mode. You can also add or exclude channels located on this server in the AirX Launcher configuration as described above.

ATTENTION: Use the **Clear all data in the application launcher** item of the user menu **User: Username** to clear the configuration.

After configuration is complete, click OK to apply the changes. The initial interface of the AirX Launcher app will be changed as follows:

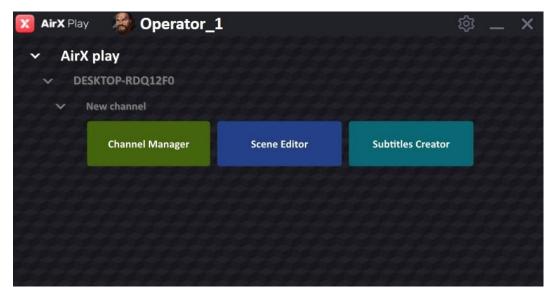


Figure 153. AirX Launcher window with one playout channel



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AirX AppLauncher configuration and setup in Redundancy mode

To configure AirX AppLauncer in redundancy mode, use the same methods as described in **AirX AppLauncher configuration and setup** chapter:

 Double click on the AirX Launcher icon on your desktop to get started with the authorization form. Enter the Login and Password you specified in the User Accounts branch of the Server resource tree (see the AirX Control app, Users chapter), or use the default Login and Password (Admin; 12345).

	Authorization			×
AirX Launcher	Login: Password:	admin		•
			ок	Cancel

Figure 154. Authorization

 In the new vpAppLauncher window you will see the only one (but important) settings button. Click this button to open the User configuration popup window.

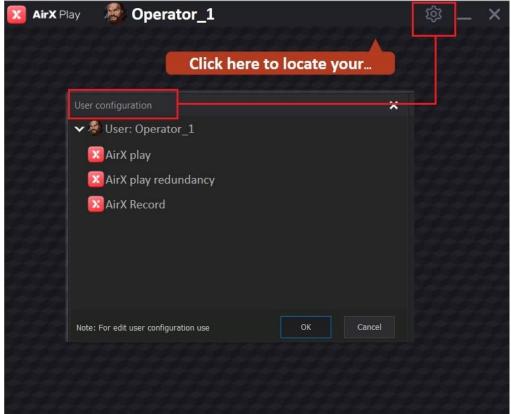


Figure 155. User configuration



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 Open the User configuration window and select the top line User: Username. Call the context menu and click the Search for playout servers in the local network item.

User configuration			×
User configuration User: Operato Carlot AirX play CAirX play redu CAirX Record	undancy Query servers a	Set user avatar Search for playout servers in the local network Add remote server Clear all data in the application launcher ind channels ork servers. Please wait Cancel	×
Note: For edit user configu	ration use	OK Cancel	

Figure 156. Search for playout servers in the local network

4. After the search is complete, you will see all the servers available on the local network in the User configuration window.

At the end of the search process, the application window will be changed:

User configuration	×
🗸 🍣 User: admin	
✓ 🔽 AirX play	
✓ I☐ DESKTOP-RDQ12F0	
Emannel 1	
✓ 🔽 AirX play redundancy	
Ch001-250(10.0.40.32) / Ch001-249(10.0.40.82)	
XirX Record	
Note: For edit user configuration use OK Cancel	

Figure 157. User configuration window with two servers in Redundancy mode

5. You can also add servers that are in redundancy to the AirX Launcher manually. Return to step 3 of the current list and select the upper line User: Username in the User configuration window. Call the context menu and select the Add remote server item. Enter the IP address of the first server configured in Redundancy mode and click OK.

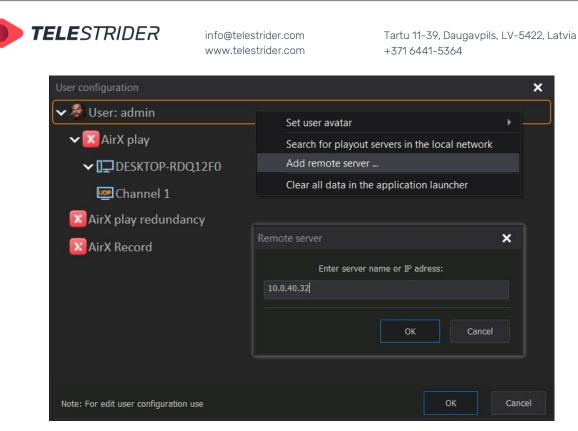


Figure 158. Add remote server manually

6. Repeat the actions described in step 5 of the current list to add a second server. **ATTENTION**: Until the second server is added, do not use the AirX Launcher to access the playout channel applications (especially the Channel Manager app) as this may cause the incorrect software behavior.

After configuration is complete, click OK to apply the changes. The User configuration window will be changed:

User configuration	×
🗸 🐉 User: admin	
✓ 🔯 AirX play	
✓ I DESKTOP-RDQ12F0	
Channel 1	
✓ 🔽 AirX play redundancy	
🔤 Ch001-250(10.0.40.32) / Ch001-249(10.0.40.82)	
AirX Record	
Note: For edit user configuration use OK Cancel	

Figure 159. User configuration window with two servers in Redundancy mode

7. The servers added to the AirX Launcher in Redundancy mode are named A and B. This **does not mean** that server A is the main one, and server B is the backup



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one. The servers are **completely equal** and the letters are assigned randomly. To switch servers A and B, select a pair of channels configured in redundancy mode, call the context menu and select **Switch [A] [B]** from the drop-down list.

User configuration		×
🗸 🍣 User: admin		
🗸 🔽 AirX play		
✓ 🖵 DESKTOP-RDQ12F0		
🔤 Channel 1		
🗸 🔯 AirX play redundancy		
Ch001-250(10.0.40.32) / Cl	1001-249(10.0.40.82)	
AirX Record	Enable/Disable redudancy channels for use in the application launcher	
	Use TCP connection	_
	Switch [A] [B]	
l l	Properties	
	Remove	
Note: For edit user configuration use	OK Car	ncel

Figure 160. Switch [A] and [B] servers

8. Click OK to add all servers and channels located on them to the AirX Launcher interface.

If you do not want to manage all playout channels from one client workstation, you have to exclude channels from the configuration. Call the context menu by clicking on the name of the playout channel you want to exclude. Select **Enable / Disable channel for use in the application launcher**. Checkbox means the channel is enabled, unchecked means the channel is disabled.

User configuration		×					
🗸 🖓 User: admin							
🗸 🔽 AirX play							
✓ ☐ DESKTOP-RDQ12F0							
🔤 Channel 1							
🕶 🔯 AirX play redundancy							
🔤 Ch001-250(10.0.40.32) / Ch0	01-249(10.0.40.82)						
AirX Record	Enable/Disable redudancy channels for use in the application launcher						
	Use TCP connection						
	Switch [A] [B]						
	Properties						
	Remove						
Note: For edit user configuration use	OK Cance						

Figure 161. Enable / Disable redundancy channels for use in the application launcher

9. After configuration is complete, click OK to apply the changes. The initial interface of the AirX Launcher app with redundancy channels will change as follows:

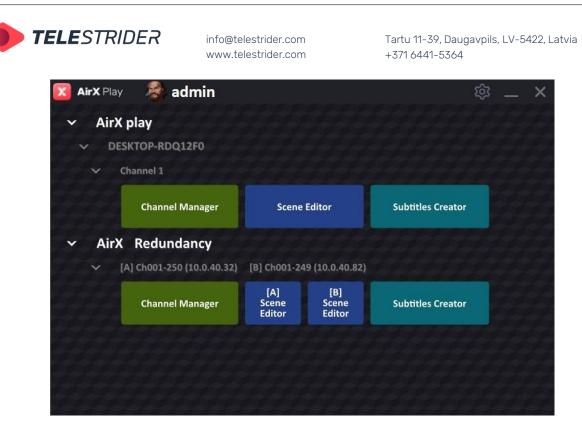


Figure 162. AirX Launcher window with one playout channel and a pair of redundancy

Changing the connection mode

It is not always possible to use a UDP connection due to network conditions. Although the data transfer rate (DTR) over the UDP is higher but in case of networks with an unstable connection, it is better to use a TCP which provides packets retransmission.

Select the playout channel in the User configuration window to change the connection mode from UDP to TCP and back. Call the context menu by right-clicking on the channel name and select **Use TCP connection** in the drop-down list. Checkbox means the TCP connection is enabled; unchecked means the UDP connection is enabled.

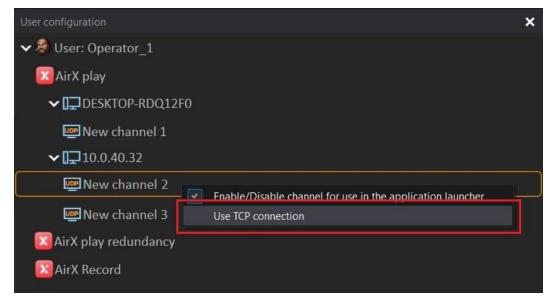


Figure 163. Use TCP / UDP connection



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User applications, definition & overview

The main applications for the AirX user:

AirX Launcher is a client workplace application for broadcast playout servers and playout channels addition and launching. This configurator allows you to launch the applications for the playout channel's schedule managing, for CG creation and for subtitles editing.

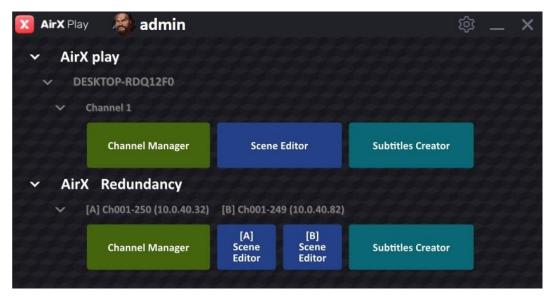


Figure 164. AirX Launcher interface

Channel Manager is the main scheduling application. It allows you to create an OnAir schedule manually or work with a schedule downloaded from a third-party source (broadcast traffic management system). Also, the Channel Manager allows the GC insertions and AD insertion markers processing.

2:28:57:01 00:01:02	:05	54.38%	2178.mp4		140	70868.mp4			Þ	÷	▶ 🗈			
Channel Source (New channel)														
Channel resources		OnAir Edit											1941 194	
👷 Live	IT	vpe CC	1 1001 0			Date & time		Duration		Out	Name	Source	AUTO DO	
Scene		12										D:\media		LUFS
🕽 🗔 Logo			**									D:\media	- 24 dB	
🕽 🌐 Web URL		12						00:02:16:10	00:00:00:00	00:02:16:10	2_5215399489275170868			
A Events												D:\media	— 18 dB	
Plugins		12	-					00:00:19:24	00:00:00:00	00:00:19:24	BARS and TONE.mxf	D:\media	- 18 di	
Channel programming		E E E					06 03:28:01:16	00:00:03:00	00:00:00:00	00:00:03:00		D:\media		-12
Media folders		88					06 03:28:04:16	00:00:04:05	00:00:00:00	00:00:04:05		D:\media	- 12 d8	-15
D:\media\		B 2					06 03:28:08:21		00:00:00:00			D:\media	- 12 00	
		1.2		1 [2023-02-	06 04:23:37:24	00:13:41:17	00:00:00:00	00:13:41:17	creating_logo.mp4	D:\media		-11
Source content browser						UNDERRU	JN -00:02:40:09						-6 dB	-21
 Name 01-20170328.mp4 	× 1			2		Q 2023-02-	06 04:40:00:00				Block item			-24
2177.mp4		1 2					06 04:40:00:00	00:09:07:14	00:00:00:00	00:09:07:14	2_5215399489275170857.	.mp D:\media		-47
		12					06 04:49:07:14	00:00:32:10	00:00:00:00	00:00:32:10	Speakeasy Drink Creation.r	mp4 D:\media	0-0 dB	- 30
2_5215399489275170868.m	19/	E 2					06 04:49:39:24	00:02:00:00	00:00:00:00	00:02:00:00	DoYouKnow_2min_v2.mp4	D:\media	Y	
2178.mp4		1 2												-55
BARS and TONE.mxf		11	 -	1		0 2023.02.	06.04:57:77:07	00:05:00:00	00:00:00:00					-56
19746.mp4	-													-39
Channel Preview (New channel)	Layer		Offset en			Duration	Name		fset start time	Offset end time	Name	Program		-42
		00:00:00:0	00:02:16			00:00:10:01		7 22	:02:16:10	00:00:00:00		0	— -12 dB	-5
	2	00:00:45:0	00:01:31			00:00:12:02	Now_Artist_Pla	ishka 🛛						
A LAND AND A		00:00:00:0	00:02:16			00:00:15:00	Info							-4
and the second second		00:00:00:0	00:02:16			00:00:10:00	Name_Age_Sm	ioking 4						-51

Figure 165. Channel Manager interface



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Scene Editor is a built-in CG editor for creation of on-air graphic design scenes and/or graphics conversion to the internal graphic scene format for AirX software. It allows you to operate with CG of various levels of complexity from a simple overlay of a static logo to a multilayer dynamic design using PIP, FILL + KEY, RSS, etc.



Figure 166. Scene Editor interface

Subtitles Creator is the built-in subtitle editor application for *.srt creation and express editing. AirX broadcast automation can create subtitles up to 8 languages per channel simultaneously.

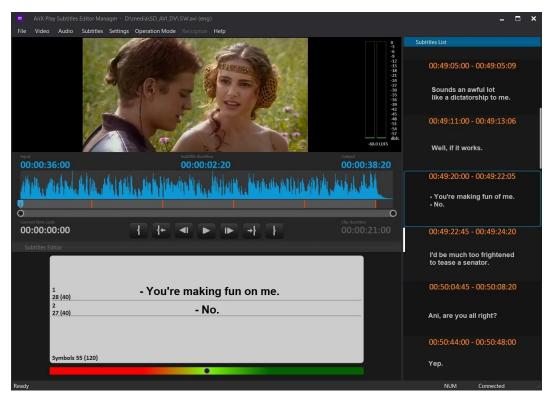


Figure 167. Subtitles Creator interface



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User profiles and access

AirX broadcast automation allows you to create independent user profiles. This function allows differentiating the user's permissions to playout channels (services) configured in the system. Each user's profile have an access to the channels he assigned.

For detailed information see the following chapters:

- Users
- User account interface
- Set up the user permissions

You can set the personal permissions for each user:

- Allow channel authorization general access to the channel
- OnAir control air control (start broadcasting or forced changing of playback position)
- OnAir editor access to editing the air schedule
- Schedule editor access to editing the saved schedule
- Scene editor access to editing scenes
- Spectator spectator mode, any actions are prohibited.

It means that you can assign the permissions from a simple observer to a superadministrator.

Use the instructions described in the **AirX AppLauncher configuration and setup** chapter to create a custom configuration of available servers and channels for each user. Edit the list of channels available for a user's profile by changing the **Enable / Disable channel for use in application launcher** parameter.

AirX play (Client-side). Initial interface

Authorization. Launch. Redundancy mode

Double click on the AirX Launcher icon on your desktop to get started with AirX.

When you start the program, the authorization form will be opened. Enter the Login and Password you specified in the **User Accounts** branch of the Server resource tree (see the AirX Control app, **Users** chapter) or use the default Login and Password (Admin; 12345).

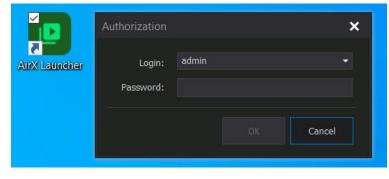


Figure 168. Authorization



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In the new **vpAppLauncher** window you will see the initial AirX interface with playout channels, available for logged-in user.

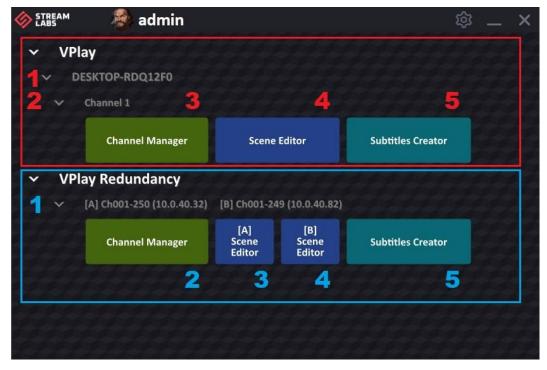


Figure 169. AirX Launcher window with one playout channel and a pair of redundancy

You can see two possible AirX modes in the Figure above: One single playout channel (outlined in red) and a pair of channels, working in Redundancy (outlined in blue).

Single playout channel attributes:

- 1. The name of the broadcast playout server where the channel is located
- 2. The name of the playout channel
- 3. Channel Manager scheduling application, associated with the channel
- 4. Scene Editor built-in CG editor, associated with the channel
- 5. Subtitle Creator built-in subtitle editor, associated with the channel

Each playout channel will launch its own instances of the Channel Manager, Scene Editor and Subtitle Creator applications. You cannot open schedules of several playout channels in one Channel Manager window!

A paired Redundancy channels attributes:

- Location and name of each of the pair of channels. [A]Ch001-250(10.40.32) means: [Server A] Playout channel name (IP address of the server where the channel is located). The same for the second channel. Letters A and B are assigned to playout channels at the moment they are added to the AirX Launcher application. This **does not mean** that server A is the main one, and server B is the backup (!) Servers and channels in 1+1 mode are completely equal and letters A and B are assigned randomly.
- 2. Channel Manager scheduling application for both channels. This allows you to manage the schedules of both channels and send control commands to both servers simultaneously.
- 3. Scene Editor built-in CG editor, associated with the channel A
- 4. Scene Editor built-in CG editor, associated with the channel B
- 5. Subtitle Creator built-in subtitle editor for both channels.



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Channel Manager

User interface description



Figure 170. Channel Manager interface

Channel Manager Interface includes:

- 1. Channel Manager main window Playout channel management, control menu
- 2. Channel Source window All connected sources of any type
- 3. Source content browser window File manager that contains all contents of folders connected to the channel
- 4. Channel Preview window Visual preview of the processing schedule
- 5. Channel OnAir window Playlist / Schedule window for scheduling
- 6. Item's Scenes window. Channel CG CG overlay scheduling. Refers to the window 5
- 7. Item's Output Events window Output Control events scheduling. Refers to the window 5
- 8. Channel Audio ctrl window Channel sound settings
- 9. Channel Logo Slot window Channel logo slots
- 10. Channel Manual GFX ctrl window Overlay and launch of CG objects in manual mode
- 11. Channel Auto GFX ctrl window Overlay and launch of CG objects in auto mode control window
- 12. Channel Player window Channel video player
- 13. Manual Events ctrl window Manual control of the output of external events
- 14. Channel command pane Quick command settings pane
- 15. Schedule Editor window Additional window for editing schedules and playlists (off-the-air scheduling)
- 16. Countdown window A countdown timer to a selected event in the schedule.

By the default, the interface of Channel Manager contains windows 1-8.

Channel Manager main window

The main window of Channel Manager application contains info fields and control elements.

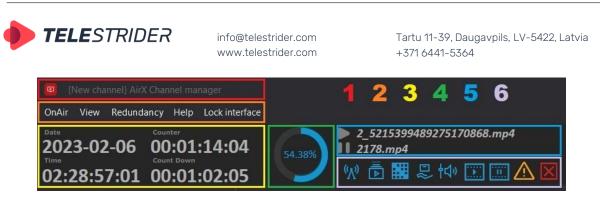


Figure 171. Channel Manager main window (part 1)

- 1. The title bar of the application window. The square brackets contain the name of the current playout channel.
- 2. Control menu includes the following submenu items:
- **OnAir**. Click this menu to expand a drop-down to change the channel workflow (Playlist or a Schedule). This menu duplicates the command buttons in the upper right part of the app. window.

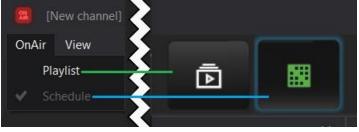


Figure 172. Playlist/Schedule modes

- View. Click this menu to expand a drop-down list of Channel Manager application windows and possible actions with them. This menu allows you to customize the order and location of windows on the screen, as well as save these location settings as presets. Checkboxes mark windows that open by default by the initial launch of the Channel Manager.



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[New cha	nnel] AirX Channel ma	anagei		
View	Help Lock interfa	ice		
~ :	Source	Alt+1		
~	OnAir	Alt+2		
(1	Logo Slot	Alt+3		
 I 	Audio ctrl	Alt+4		
	Manual GFX ctrl	Alt+5		
	Auto GFX ctrl	Alt+6		
~ 1	Preview	Alt+7		
	Player	Alt+8		
	Manual Events ctrl	Alt+9		
) (Command control	Alt+0		
	Schedule Editor			
	Edit windows		Þ	
(Countdown			
1	visible Past OnAir Iten	าร		
1	Show command butto	ins	Þ	
	Layout manager			
	ayout presets		►	
	Reset layout to defaul	t		

Figure 173. Channel Manager System menu. View submenu

Source - Enables the Channel Source and Source content browser windows containing the channel source tree. See the Channel Source window, Source content browser window chapters for details.

OnAir - Enables the Channel OnAir window containing the air schedule/playlist. See the Channel OnAir window chapter for details.

Logo Slot - Enables a window with available logo slots. See the Channel Logo Slot window chapter for details.

Audio Ctrl - Enables the channel's audio settings window. See the Channel Audio ctrl window chapter for details.

Channel Manual GFX ctrl - Enables a window for overlay and launch of CG objects in manual mode. See the Channel Manual GFX ctrl window chapter for details.

Channel Auto GFX ctrl – Enables a control window for overlay and launch of CG objects in auto mode. See the Channel Auto GFX ctrl window chapter for details. **Channel Preview** – Turns on the visual preview of the current playout channel

in additional window. See the Channel Preview window chapter for details.

Channel Player - Enables the channel's video player. See the Channel Player window chapter for details.



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Manual Events ctrl - Enables a window that allows manual control of the output of external events. See the Manual Events ctrl window chapter for details.

Command control - Turns on the Quick command settings pane in additional window. See the Channel command pane chapter for details.

Schedule Editor – Turns on an additional window for editing schedules and playlists (off-the-air scheduling). See the Schedule Editor window chapter for details.

Edit windows - Navigation between schedules/playlists opened in the Schedule Editor window

Countdown - Turns on the forward / backward countdown additional window. See the Countdown window chapter for details.

Visible Past OnAir Items - a setting that allows you to specify how many rows passed in the on-air schedule will be displayed in the OnAir window. Here you can set any value. By default, AirX shows ten passed rows of the schedule but it stores information about the previous three days, so it can show as many rows, as necessary.

[New channel] AirX Channel manager	[Set past OnAir view items 5 • Cance		
Show OnAir Edit Show columns	⊲ 📼 ► 1	4 March 2023, Tuesday		
Type CC ⚠́ ∭	Scal	e Date & time	Duration	In
1				00:00:00:00
	🗵 🔲			00:00:00:00
1				00:00:00:00
	🗵 🗖			00:00:00:00
1				00:00:00:00
		2023-03-14 01:51:21:26	00:02:04:42	00:00:00:00
		2023-03-14 01:53:26:18	00:02:46:22	00:00:00:00
	🗵 🗖	Q 2023-03-14 01:56:12:40	00:03:33:08	00:00:00:00
1		Q 2023-03-14 01:59:45:48	00:02:03:34	00:00:00:00
	🖾 🗖	Q 2023-03-14 02:01:49:32	00:01:46:08	00:00:00:00
1		2023-03-14 02:03:35:40	00:01:44:04	00:00:00:00

Figure 174. The passed schedule rows

Show command buttons - a setting that allows you to enable or disable the command buttons on the top bar of the main Channel Manager window.

Countdown						
Visible Past OnAir Items				 		
Show command buttons	Server A					
Layout manager	Server B	A	в	•	Ē	
Layout presets	Play by current server time					
Reset layout to default	Play from selected position					
	Skip					
	Select OnAir Playlist					
	Select OnAir Schedule					
10 - 11						

Figure 175. Enable/Disable command buttons

Layout manager and **Layout presets** allow you to create and save custom window layouts for the Channel Manager application. See the Creating a custom layout chapter for details.



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Reset layout to default - A button that resets the layout of the interface windows to the initial state ("Return everything as it was" or "Bring everything back!").



Figure 176. Bring everything back (reset layout to default)

 Redundancy setting allows you to synchronize playout channels that are in the redundancy mode.

[New channel] AirX Channel manager				
OnAir Viev Redundancy Help Lock	interfa e			
Synchronize channel B 2023-03-14 01:40:07:3 Time Count Down 02:21:01:25 00:03:47:5	5.59%	CODEC_ORIG.mxf	v with Turiya.mp4	A B
AirX Channel Source [New channel]				
Channel programming	Show OnAir Edit Sł	how columns 🛛 🔳 🕨	14 March 2023, Tu	esday
🛇 📕 Media folders	Type CC	🛕 🔤 🖵 Scale	2 Date & time	Duration
> 📕 D:\media\		X — 🛄	@ 2023-03-14 02:2	0:48:00 00:04:01:14
H:\RECORD\	1		2023-03-14 02:2	4:49:14 00:30:27:11
Source content browser		🖾 💭	Q 2023-03-14 02:5	5:16:25 02:00:47:15
Type Name		🛄 🔲	🕒 2023-03-14 04:5	6:03:40 00:01:44:04
▶ 01-20170328.mp4			🕒 2023-03-14 04:5	7:47:44 00:02:23:28
▶ 2177.mp4		🖂 🔍	Q 2023-03-14 05:0	0:11:22 00:00:17:34
2_5215399489275170868751	1	I I I I I I I I I I I I I I I I I I I	Q 2023-03-14 05:0	0:29:06 00:13:42:22
2178.mp4		II. II.	@ 2023-03-14 05:1	4:11:28 00:00:36:08
BARS and TONE.mxf 19746.mp4			Q 2023-03-14 05:1	4:47:36 00:00:05:02

Figure 177. Synchronize channels

See the **Channel redundancy (1+1 redundancy settings)**, **AirX channel redundancy (1+1)** chapters for details.

- **Help**. Click this menu to open the About info window. In this window you can find the Name, version and edition of AirX Play product.



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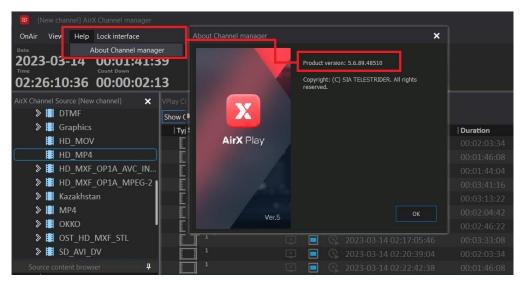


Figure 178. About Channel manager

 Lock interface. A control button to lock the Channel Manager interface. The program will stop responding to any user's actions until the interface is unlocked by pressing Lock Interface again.

Help	Lock i	nterface		
Down	14:0 02:0	54.38%	 2_5215399489275170868.mp4 2178.mp4 2178.mp4 	
nel]	×			

Figure 179. Lock interface

3. Time counters info pane. Contains four counters:



Figure 180. Time counters

- Date current date, synchronized with the server date
- Time current time, synchronized with the server time
- Counter the time passed since the beginning of playback of the current schedule row
- Count down the remaining time until the end of playback of the current schedule row
- 4. Pie chart progress bar of the current schedule row, showing the progress both in graphical representation and in percent



Figure 181. Pie chart progress bar

- 5. Info fields showing the names of active schedule rows:
- On-air (currently playing clip)



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- Ready for playback (next in the schedule)



Figure 182. Active schedule rows

6. Info icons, displaying the modes and current statuses of the channel

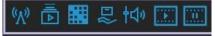


Figure 183. Info icons of the Channel Manager main window

- Live onAir External Live source is on-air now
- Playlist mode AirX is in the Playlist mode
- Schedule mode AirX is in the Schedule mode
- Manual logo Logo overlay in manual mode
- **Audio in manual mode** Automatic loudness normalization is disabled.
- Reserve clip in program The block scheduled as a reserve (see the Media folders and content replacement chapter for details) is on-air now
- Reserve clip in preview The block scheduled as a reserve will be played next
- Warning and Error icons:



Figure 184. Warning and Error icons

Warning (yellow triangle) indicates that there are files in the schedule, whose parameters do not match the Playout channel settings (aspect ratio, fps, etc.). The files will be played according to the schedule and the broadcast will not be stopped. According to the "non-critical" status, such files are not highlighted in the schedule window by default. The highlighting of Warnings elements can be enabled from the Edit menu (see the **Channel OnAir window, Schedule mode** chapter for details).

Error (red cross) indicates that schedule contains files with critical errors. For example, the video files that there are in the schedule are missing from the broadcast playout server storage or corrupted. Such error rows (missing or corrupted video files, CG files, incorrectly filled service slots) will be highlighted in red in the schedule. In addition, their location will also be duplicated by a red mark in the scroll bar of the schedule window on the right.

If the schedule playback reaches the row marked in red, the behavior of AirX automation will depend on the reason that caused the Error status. For example: if an error is caused by a missing CG file on the server storage, the primary event (the video file) will be played without overlays. The broadcast will not be stopped. However, if the error is caused by a missing or critically corruption of a primary event (a video file in the schedule), you will see a black field on the air (or media file/live input, specified as a replacement instead of a black field). See the **Media folders and content replacement**, and the **Input redundancy** chapters for details.



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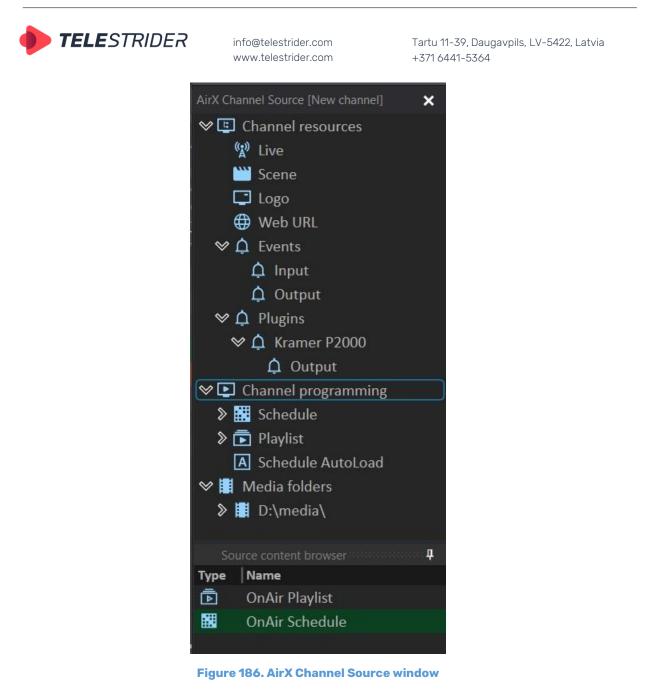
Figure 185. Channel Manager main window (part 2)

- 7. Control buttons for switching between the schedules of servers A and B, when working in redundancy mode. See the **AirX channel redundancy (1+1)** chapter for details.
- 8. Main function buttons to control the playback of the schedule in manual mode.
- **Play by current server time** click it to start the playback of a schedule according to the current server time.
- **Play from the selected position** click it to interrupt the currently playing clip and jump to the currently selected (highlighted) item in the schedule.
- **Skip** click it to interrupt the currently playing clip and jump to the next item in the schedule.
- 9. Control buttons to change the channel workflow (Playlist or a Schedule).
- 10. The info field contains the current channel format, resolution and fps.

Channel Source window

The Channel Source window contains the Channel source tree and indicates all the connected sources of any type, including File folders, Live sources, CG folders and files, External events etc.

In addition the Channel Source window provides the functionality for editing playlists and channel schedules (both the on-air and off-the-air scheduling).



The Channel Resource tree contains the following branches:

- **Live** contains all the connected Live sources, available for the current Playout channel (see the **Channel live inputs** and the **Live sources connection and distribution** chapters for details).
- Scene contains all the CG scenes, available for the current Playout channel.
 CG scenes are stored in the broadcast playout server storage in folders associated to the channel format (for example: D:\Ch1\Scenes\1920x1080).
 Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible.
- Logo contains all the logos, available for the current Playout channel. Logos are stored in the broadcast playout server storage in folders associated to the channel format (for example: D:\Ch1 \Logo\1920x1080). Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible.
- Web URL URLs of WEB resources that can be used as schedule elements. All sources in this section have to be added manually from the client application interface. See the WEB URL mode chapter for details.



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- Events contains branches Input and Output for different types of external events. The Input branch contains external events that can be detected by AirX in input streams. For example, the SCTE-35 markers from the incoming satellite stream. The Output branch contains external events that AirX can send in its output stream. For example, the ad markers generated by the playout channel. See the AD insertion (DAI) workflow chapter for details.
- Plugins contains branches, associated with the connected external devices, available for the current playout channel. You can see the connected Kramer matrix switcher as an example in the Figure 186. See the External devices chapter for details.
- Channel Programming. Expand the branch to see the following items:
 Schedule Edit the channel schedules,
 Plaulist Edit the abapted plauliste
 - **Playlist** Edit the channel playlists,

Schedule Autoload - Edit the auto-loaded schedules.

All these branches are actually file folders on the broadcast playout server. These folders contain schedule files of different types. Therefore, each of the schedules stored in these folders can be edited. For a detailed description of how to work with different types of schedules, see the following chapters:

Scheduling of Simple TV channels Live streams and frequently changing schedules. Live video workflow. Live streams and additional playlists. Prescheduling workflow. AD insertion (DAI) workflow

AirX channel redundancy (1+1)

In addition the Channel Programming branch allows you the on-air scheduling for both the on-air schedule and on-air playlist.

Click the **Channel Programming** branch to open the OnAir Playlist and the OnAir Schedule in the **Source content browser** window.

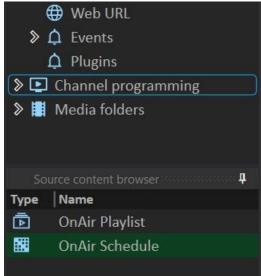


Figure 187. OnAir Playlist and OnAir Schedule

There are the playlist and the schedule that are currently active (OnAir). If the AirX is in the Schedule mode, the OnAir Schedule file will be highlighted in green. This means that the editing is available only from the workspace of the **Channel OnAir** window. At the same time, you can open the active OnAir Playlist (not highlighted in green) in an additional window and edit it.

The same works with the Playlist mode - you can simultaneously edit the active schedule (during the playback of the playlist), opening it in an additional window.



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023-02-08 00:16:25: 0:12:09:18 00:41:16:	13 21	2178.mp4 BARS and TONE.msf	P			
Channel Source (New channel 2) Channel resources	Construction of the second second	il 2) UnAir: Schedule w columns 🛛 🖅 🕨 7 February 2023, Tuesday				AirX C unel Audio con
1 Live		☆ columns	Duration In	Out	Name	
Scene	1.2			00:00-00 00:00:45:00		D:\media - 7.7 LUFS
E Logo	1.2					D:\media
🕽 🌐 Web URL	1.2					TUD-0 TWOEST
Events	02	2023-02-07 23:55:44:05			2178.mp4	D:\media
Plugins	12	2023-02-08 00:53:26:15			BARS and TONE.mxf	D:\media - 3 dB
Channel programming	88	2023-02-08 00:53:46:14	00:00:03:00 00:	00:00:00 00:00:03:00	19746.mp4	D:\media
Media folders	88	Image: Control of the second secon	00:00:04:05 00:	00:00:00 00:00:04:05		D:\media
Source content browser		Playlist OnAir (not active) AirX Channel manager [New channel 2] OnAir Playlist Edit Show columns				Î
			e Duration In	Out	Name	Source
	12	🗖 '' 🗉 🖬 🖻				D:\media\HD_MP4\ALIVE
	1 2	12 II II II I				D:\media\HD_MP4\ALIVE
	1 2	🗖 12 🖸 🗖		0:00:00 00:01:00:00	ALIVE Canada 4K_1.mp4	D:\media\HD_MP4\ALIVE
	Item's Scenes			0:00:00 00:01:00:00		D:\media\HD_MP4\ALIVE
Channel Preview (New channel 2) ×	Layer Offset start time			0:00:00 00:01:00:00 0:00:00 00:01:00:00	ALIVE Canada 4K_1.mp4 ALIVE Canada 4K_1.mp4	D:\media\HD_MP4\ALIVE D:\media\HD_MP4\ALIVE
•	2					
	3	Item's Scenes Layer Offset start time Offset end time Duration	n Name	tem's output eve # Offset start t		# Pro

Figure 188. OnAir Playlist and OnAir Schedule

- **Media folders** – contains all the file folders, available for the current Playout channel. See the **Media folders and content replacement** chapter for details.

Source content browser window

The Source content browser window is intended to show the contents of the **Channel Source menu** branches of the Channel resource tree.

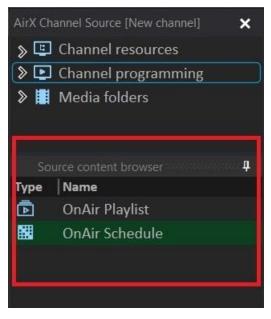


Figure 189. Source content browser window

1. The **Live** branch of the Channel resource tree contains all the connected Live sources, available for the current Playout channel.

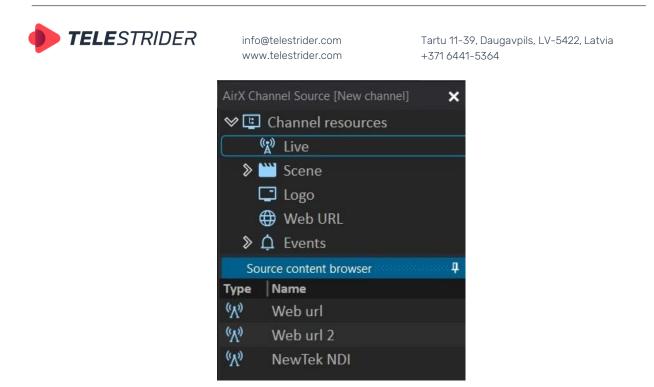


Figure 190. Live branch of the Channel resource tree

All sources in the Live branch must be configured as Live inputs in the AirX Control app on the broadcast playout server (see the **Channel live inputs** chapter for details).

The Source content browser window contains the following columns for the **Live** branch:

Type - Content type icon

Name - The names of the Live sources

Duration – The scheduled playback time of the Live source. Normally this column shows the actual duration of each video file but in case of the Live input the default value is 01:00:00:00. You can change this value to make your source playback shorter.

The context menu allows you to search through the list of sources.

2. The **Scene** branch of the Channel resource tree contains a file manager of all CG files and subfolders available for the current Playout channel.

AirX Cł	nannel Source [New channel]	×
⊗ ⊑	Channel resources	
1	🙀 Live	
	👑 Scene	
Sc	ource content browser	ą
Туре	Name	
	Tag Now-Next	
***	16+synt	
***	Now_Artist	
***	Info	

Figure 191. Scene branch of the Channel resource tree

All the CG scenes, available for the current Playout channel are stored in the broadcast playout server storage in folders associated to the channel format (for example: D:\Ch1\Scenes\1920x1080) as *.vpScene files. Folders are created



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automatically in the moment of a playout channel creation; changing the folder path is not possible. AirX broadcast automation supports subfolders within the defined channel folder.

The Source content browser window contains the following columns for the **Scene** branch:

Type – Content type icon

Name - The names of the *.vpScene CG files

Duration – The scheduled playback time of the *.vpScene CG files. This column shows the actual duration of each CG file.

Def. Layer - The layer for on-air CG overlay. Scenes have def.layer = 0 by default

Def. Duration - The duration of CG scenes, set automatically based on the duration of the longest scene element.

The context menu allows you to search through the list of Scenes.

If you select one of the Scenes in the Source content browser window, the **Show Media Info** context menu item will be activated. The Media Info will be opened in an additional window.

Media info		×
□ MediaInfo		
VariableDuration	0	
Duration	00:00:06:21	
Name	Tag example Now Next	
Descr		
ObjCount	3	
⊟ Attributes		
Duration	0	
DefaultLayer	0	
OffsetType	2	
OffsetDuration	8000000	
	Close	

Figure 192. Media Info of the *.vp.Scene file

3. The Logo branch of the Channel resource tree contains a file manager of all Logo (*.vpScene) files and subfolders available for the current Playout channel. All the Logos, available for the channel are stored in the broadcast playout server storage in folders associated to the channel format (for example: D:\Ch1\Logo\1920x1080) as *.vpScene files. Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible. AirX broadcast automation supports subfolders within the defined channel folder.

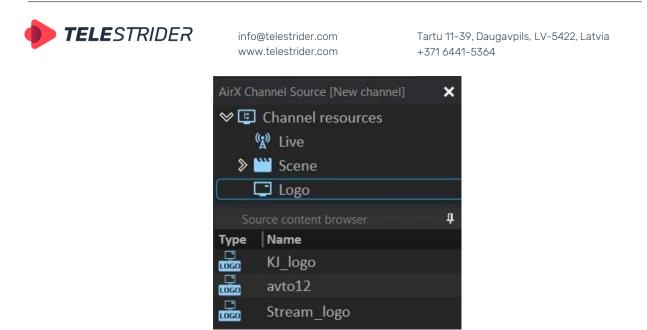


Figure 193. Logo branch of the Channel resource tree

The Source content browser window contains the following columns for the **Logo** branch:

Type – Content type icon

Name - The names of the *.vpScene Logo files

The context menu allows you to search through the list of Logos.

If you select one of the Logos in the Source content browser window, the **Show Media Info** context menu item will be activated. The Media Info will be opened in an additional window.

4. The **Web URL** branch of the Channel resource tree contains a list of WEB resources that can be used as schedule elements. All sources in this section have to be added manually. See the **WEB URL mode** chapter for details.



Figure 194. Web URL branch of the Channel resource tree

The Source content browser window contains the following columns for the **Web URL** branch:

Type - Content type icon **Name** - The names of the WEB resources **Description** - The descriptions of the WEB resources



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The context menu allows you to search through the list of WEB resources, and also you can add or delete the source from the list.

If you select one of the WEB sources in the Source content browser window, the **Show Media Info** context menu item will be activated. The Media Info will be opened in an additional window.

Med	ia info	×
Θ	Main	
	url	https://30a-tv.com/music.m3u8
	Streams	2
	Duration	00:00:00.000
	Format	Apple HTTP Live Streaming
	Overall Bit Rate, bps:	0 (0 Kbps)
	StartTimecode	00:00:0000
Ξ	Video	
	StreamType	0
	id	0
	index	0
	Format	H.264 / AVC / MPEG-4 AVC / MPEG-4 part
	Format_Profile	Main
	FrameRate	29.97
	Width	1280
	Height	720
	FieldsOrder	0
Ξ	Audio	
	StreamType	1
	id	0
	index	1
	Format	AAC (Advanced Audio Coding)
	Format_Profile	LC
	Channels	2
	SamplingRate	48000
	Bits	16
	Close	

Figure 195. Media Info of the Web URL

5. The **Events** branch of the Channel resource tree contains a list of available external events that can be used as schedule elements.



Figure 196. Events branch of the Channel resource tree

As you can see in the figure above, the Events branch has two sub-branches **Input** and **Output** for different types of external events. The **Input** branch contains external events that can be detected by AirX in input streams. For example, the SCTE-35 markers from the incoming satellite stream. The **Output** branch contains external events that AirX can send in its output stream. For example, the ad markers generated by the playout channel. See the **AD insertion (DAI) workflow** chapter for details.

The Source content browser window contains the following columns for the **Events** branch:

Type – Content type icon

Name - The names of the external events

There is no context menu in the Source content browser window for the Events branch

6. The **Plugins** branch of the Channel resource tree contains sub-branches, associated with the connected external devices, available for the current playout channel. The **Output** sub-branch contains external events that AirX can send in its output stream. The **Input** events that can be detected by AirX in input streams must be configured in the workspace of the **Channel OnAir** window.

You can see the connected Kramer matrix switcher as an example in the Figure 197. See the **External devices** chapter for details.

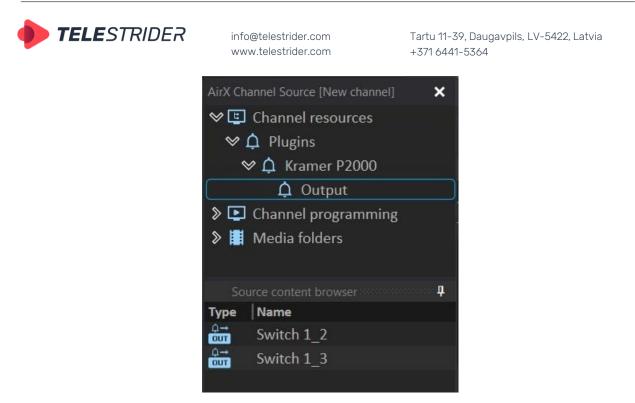


Figure 197. Plugins branch of the Channel resource tree

The Source content browser window contains the following columns for the **Plugins** branch:

Type – Content type icon

Name - The names of the external events

There is no context menu in the Source content browser window for the Plugins branch

7. The **Channel programming** branch of the Channel resource tree contains two schedules: OnAir Playlist and OnAir Schedule. They are predefined elements of the AirX broadcast automation.

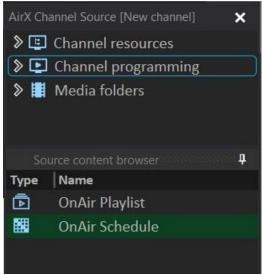


Figure 198. Channel programming branch of the Channel resource tree

There are the playlist and the schedule that are currently active (OnAir). If the AirX is in the Schedule mode, the OnAir Schedule file will be highlighted in green. This means that the editing is available only from the workspace of the **Channel OnAir** window. At the same time, you can open the active OnAir Playlist (not highlighted in green) in an additional window and edit it.



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The same works with the Playlist mode - you can simultaneously edit the active schedule (during the playback of the playlist), opening it in an additional window.

Piew channel 2) Arix Channel manager	- 🗆 ×
	920x1080, 25 transes
bran Carater 2023-02-08 00:16:25:13 22.08 NPA 11 BARS and TONE.mxf II BARS and TONE.mxf II BARS and TONE.mxf II BARS and TONE.mxf II BARS and TONE.mxf	
00:12:09:18 00:41:16:21	
ActX Channel Source (New channel 2) ChAn: Schedule 🗴 ActX Channel (New channel 2) ChAn: Schedule	l Audio contro 🗙
😻 🗓 Channel resources. Show Onlin Edit Show columns 🛋 📼 🕨 7 February 2023, Tuesday	a ma ana c
V Containing resources 3000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation 2003, i testaday V Containing resources 2000 counting to 1 participation	
	LUFS
C Logo 1 2 C R Construction Constructina Construction Construction Construction Constr	•
Web URL 12 2. 2023-02-07 23:53:27:20 00:02:16:10 00:02:16:10 2. 5215399489275170868.mp D:\medu	-1
C Events	-6
Plugins 1.3 2023-02-08 00:53:26:15 00:00:19:24 00:00:00-19:24 BARS and TONE.mxf D\media	
Channel programming B2 Channel programming D: Channel programming <p< th=""><th>-12</th></p<>	-12
Image: Media folders Image: Provide the second	
AiX Channel Schedule Editor (New channel 2)	× 15
The second s	×=
AvX Channel a Coviet AvX Channel analogy (New Channel 2) ChAn Phyliot	-21
D OpAir Plavlist	-24
Source	-11
13 D D D 0000000 000000 0000 0000 0000 0	IVE
	IVE
	S1000
12 December 2010000 00-00-000 00-00-00 ALIVE Canada AK 1 med December 2400 MRAAL	
Act Channel Perior (New Channel 2) X Layer (Offset start time 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Audio	-45
3 3 Contraction of the second se	4
20 Layer Offset start time Offset and time Duration Name # Offset start time Offset and time Name	Pro -51
	-54
	-57
224105	

Figure 199. OnAir Playlist and OnAir Schedule

In fact, OnAir Playlist and OnAir Schedule are *.xml files stored in the broadcast playout server storage in folders associated to the channel. Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible.

ATTENTION! Manual modification of these files is strictly prohibited due to the risk of schedule corruption by human error.

The context menu of the Channel Programming branch contains the only **Open for Edit** item for the OnAir Playlist and OnAir Schedule.

You can **expand** the Channel programming branch of the Channel resource tree to make the sub-branches available.

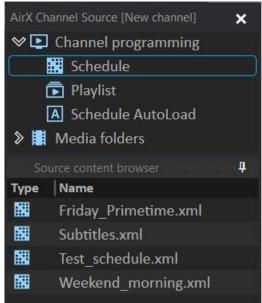


Figure 200. Channel programming sub-branches

Schedule - Edit the channel schedules, **Playlist** - Edit the channel playlists,



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Schedule Autoload – Edit the auto-loaded schedules is available only if the auto loading of schedules and integration with external broadcast traffic management systems is allowed and the **Enable auto import schedule** checkbox is checked in the channel settings.

All these branches are actually file folders on the broadcast playout server. These folders contain schedule files of different types. Therefore, each of the schedules stored in these folders can be edited. The folders are associated to the channel. Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible (except the Schedule Autoload folder). AirX broadcast automation supports subfolders within all the schedule folders.

Channel programming file folders contain the schedule files of different types: **Schedules** are chronologically organized and time-accurate playlists of content. Each schedule row has a specific Date&time field. The names of .xml files of schedules can be any.

Playlists are ordinary playlists of content which are sequenced of video files with secondary events like CG, and control commands. The names of .xml files of schedules can be any.

Autoloaded schedules are the schedules created by any third-party software, which supports the playlist format, used by AirX. The auto schedule is loaded automatically at an assigned day and time. Auto schedules require specific naming structure in order to be played on the desired date and time automatically. The structure is: **YYYY.MM.DD**, where YYYY stands for year, MM-month, DD-date. **EXAMPLE**: If the name of the schedule is "2022.06.14.xml", it will be loaded on June 14th, 2022 exactly. See the **Schedule automatic import** chapter for details.

The Source content browser window contains the following columns for the **Channel programming** sub-branches:

Type – Content type icon

Name - The names of the schedules or playlists

The context menu of each sub-branch contains the following items:

Find – allows you to search through the list of schedules

Open for edit – open the schedule in an additional window for editing **Create new** – self-explanatory

Remove, Rename, Cut, Copy and Paste are standard menu items and are self-explanatory.

Set as active playlist – the menu item, available only for **playlists**. This item allows you to set the selected playlist as the OnAir Playlist in one single click.

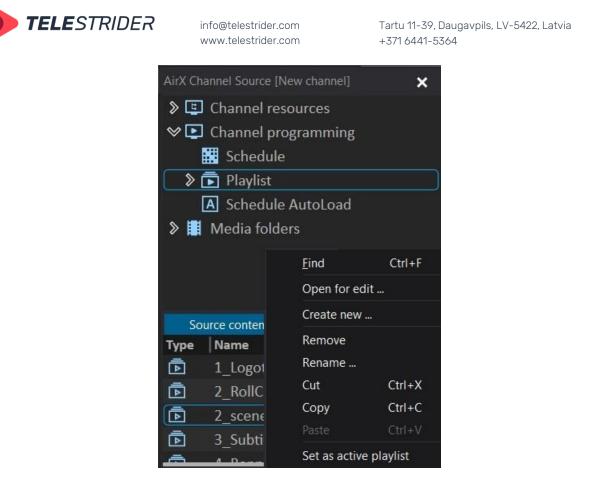


Figure 201. Channel programming sub-branches context menu

8. The **Media folders** branch of the Channel resource tree contains a file manager of all video files and subfolders available for the current Playout channel. See the **Media folders and content replacement** chapter for details.

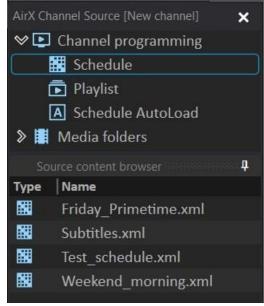


Figure 202. Media folders branch of the Channel resource tree

AirX broadcast automation supports subfolders within the Media folders directory.

The Source content browser window contains the following columns for the **Media folders** branch:

Type - Content type icon



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Name - The names of the video files

Duration – The scheduled playback time of the video files. This column shows the actual duration of each video file. You can change this value to make the file playback shorter.

The context menu allows you to search through the list of video files.

If you select one of the files in the Source content browser window, the **Show Media Info** context menu item will be activated. The Media Info will be opened in an additional window. The useful feature of the Media Info is the **Warnings** pane that contains information about all warnings and errors of a video file.

Media info	×
🗆 Main	
url	D:\media\creating_logo.mp4
Streams	2
Duration	00:13:41.700
Format	QuickTime / MOV
Overall Bit Rate, bps:	249265 (249 Kbps)
StartTimecode	00:00:000
🗆 Video	
StreamType	0
id	1
index	0
Format	H.264 / AVC / MPEG-4 AVC / MPEG-4 part '
Format_Profile	Constrained Baseline
FrameRate	30.00
Width	506
Height	360
🗆 Audio	
StreamType	1
id	2
index	1
Format	AAC (Advanced Audio Coding)
Format_Profile	LC
Channels	2
SamplingRate	44100
Language	eng
🛛 Warnings	
Warning 1	File video incorrect frame rate
Warning 2	File audio incorrect sample rate
Clos	e

Figure 203. Media Info of the video file



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Channel Preview window

The **Channel Preview** window provides a visual preview of the OnAir Playout channel including a real-time monitoring of the currently playing video with CG overlay.



Figure 204. AirX Channel preview

ATTENTION: Please note that this is not an output stream of a playout channel, but a visual preview of the current channel being generated within the broadcast playout server. Each of the channel outputs is encoded separately with the specified settings.

The window contains the **Audio** item, which, when selected, expands a drop-down menu containing the following items:

Peakmeter - visual preview of audio levels

Mute - turn off the sound

Audio device - menu for selecting an output device for the audio stream

Audio stream - audio stream selection menu.

Channel OnAir window

The Channel OnAir window allows scheduling and additional actions with the playlists of content both in the Playlist and the Schedule mode.

You must set the Schedule/Playlist mode during the initial setup of the Playout channel and you can change it later at any time (see the **Playout channel addition and setup** chapter for details).

You can also switch the Schedule/Playlist mode directly from the client workplace application if you have the relevant user permissions (see the Users chapter for details). Use the **OnAir** item of the Channel Manager **Control menu** to switch the mode.

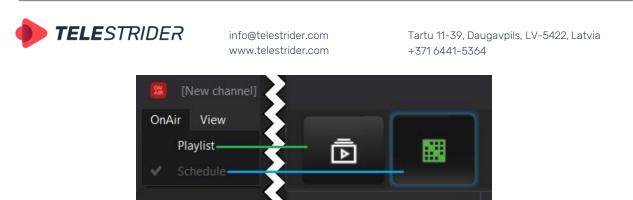


Figure 205. Playlist/Schedule modes

The interface of the Channel OnAir window depends on the selected mode.

Channel OnAir window, Playlist mode

If the Playlist mode is selected, the Channel OnAir window contains the following blocks and menus:

Type	00	I Q I 📖 I		I [;]	Scale	Duration	In	Out	Name	Source	ExtEvent	Event ID A	ge	Smoki
(A)-						01:00:00:00			Web url	Web url	Start SCTE-35 Web			
										D:\media\HD_MP4\				
						00:02:46:11	00:00:00:00	00:02:46:11	Out of town Aerial Drone	D:\media\HD_MP4\				
									Macro Match Light 4K	D:\media\HD_MP4\				
						00:02:03:17	00:00:00:00		Pacifica California	D:\media\HD_MP4\				
(A)-						01:00:00:00			Web url	Web url	Start SCTE-35 Web			
			2			00:01:31:00			Block item		Start SCTE-35 Web			
		¢.	2			00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4	D:\media\OST_HD	Start SCTE-35 Web			
						00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4	D:\media\OST_HD				
			2			00:00:20:01	00:00:00:00	00:00:20:01	The burger drop.mp4	D:\media\OST_HD				
						00:00:30:00	00:00:00:00	00:00:30:00	Rammstein - Europe Stadium	D:\media\OST_HD				
										D:\media\MP4\				
						00:26:00:00	00:00:00:00	00:26:00:00	Speakeasy Drink Creation.mp	1 D:\media\OKKO\Ob				

Figure 206. Channel OnAir window, Playlist mode

1. Control menu

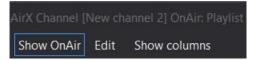


Figure 207. Control menu of the Channel OnAir Playlist window

The title bar of the Channel OnAir window contains the name of the current playout channel in the square brackets. Here you can also see that the **Playlist** mode is selected.

- Click the **Show OnAir** button to jump to the currently playing schedule row.
- Click the **Edit** button to expand the Channel playlist editor drop-down list.



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Edit			
	Disable autoscroll		Expand all blocks
	Show warnings		Expand selected blocks
	Find	Ctrl+F	Collapse all blocks
	Cut	Ctrl+X	Collapse selected blocks
	Сору	Ctrl+C	Join items into Block
		Ctrl+V	Split Block to separate items
	Delete	Delete	Insert empty block
	Delete and fill empty block	Shift+Delete	Remove loop area
	Select all	Ctrl+A	Set loop area for selected items
	Scale mode	•	Set loop count as infinity
	External event	×	Set loop count
	Logo slot		Set clip auto duration
	Manual exit		Reset clip auto duration
			Open with player
			Show MediaInfo
			Export to file
			Export selected to file
			Show errors\warnings info CtrI+E

Figure 208. Channel playlist editor drop-down list

The list contains the following items:

Disable autoscroll - disable automatic scrolling of the schedule in the workspace of the Channel OnAir: Playlist window during the playback. If this box is unchecked, the currently playing schedule row (green line) will always be at the top of the window.

Show warnings - enable playlist warning messages (yellow lines)

Find - find a particular character or word in the window's workspace

Cut - cut the element (or group of elements) selected in the workspace of the window

Copy - copy the element (or group of elements) selected in the workspace of the window to the clipboard

Paste - paste an element (or a group of elements) from the clipboard into the workspace of the window

Delete - delete an element (or a group of elements) selected in the workspace of the window

Delete and fill empty block - delete the element (or group of elements) selected in the workspace of the window and fill the deleted elements with the Empty block (Dummy clip) element

Select all - select all schedule rows

Scale mode - set the video display mode of the element: LetterBox, Pan & Scan or Anamorph

External event – assign an external event to the element (or group of elements) selected in the workspace window:

- Turn event OFF - turn off the event

- Start SCTE-35 - trigger external event Start

- Stop SCTE-35 - trigger external event **Stop**

Logo slot - assign a logo to the selected element (or group of elements) from the corresponding Logo slot:



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- Turn logo OFF - turn off the logo for the element

- Logo slot 1 - assign a logo from slot 1 to the element

Manual exit – wait for the incoming external event (for example: incoming SCTE-35) or user's action to switch the playback position. Manual exit is only available for **Live** playlist items.

Expand all blocks - expand all block items in the playlist to show the clips included in the blocks

Expand selected blocks – expand only the selected block (or blocks) **Collapse all blocks** – collapse all blocks

Collapse selected blocks - collapse only the selected block (or blocks)

Join items into block - assemble the selected clips into one block

Split block to separate items - split the block into separate clips

Insert empty block - add an Empty block element (Dummy clip) to the schedule **Remove loop area** - cancel the looped playback of selected element (group of elements). Only available in Playlist mode

Set loop area for selected items – set the looped playback for the selected element (group of elements). The number of playback cycles has to be set by the user. Only available in Playlist mode

Set loop count as infinity - set the selected element (group of elements) to play infinitely. Only available in Playlist mode

Set loop count ... - set the number of times the selected element (group of elements) will be played. Only available in Playlist mode

Set clip auto duration - set the duration of the primary event (video clip) automatically, when the content is automatically replaced. Only available in Playlist mode (see the **Media folders and content replacement** chapter for details)

Reset clip auto duration - disable the automatic assignment of the duration of the primary event during automatic content replacement. Only available in Playlist mode

Open with player - open the selected element with the built-in video player

Show MediaInfo - open an additional window containing the MediaInfo of the selected element (video file)

Export to file ... - save the current channel playlist as an .xml file

Export selected to file ... - save the selected schedule items as a separate playlist as an .xml file. Saving is available only for a group of elements selected with Shift.

Show errors/warnings info – open an additional window, listing errors of the schedule item.

 Show columns menu contains a list of columns of the OnAir window workspace. The columns can be enabled/disabled by checking and unchecking the corresponding checkboxes. All columns in the list below the Event ID item are custom and must be configured in AirX Control app (see the Channel TAGs and EPG chapter for details).



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Shc	w columns
~	Expand\collapse block
~	Item type
*	Subtitles
~	Output event
*	Scene
~	Logo
~	Loop
~	Scale (àspect ratio)
~	Duration
~	In
~	Out
~	Name
*	Source
~	ExtEvent
*	Event ID
~	Age
~	Smoking
~	Description

Figure 209. Show columns menu

2. Chanel OnAir window workspace

This is the main part of the AirX interface, dedicated to the playlist (play order) visualization.

When you launch AirX Channel Manager, depending on your startup settings, you will see an empty window, and you will have to load (create) a playlist or you will see the opened playlist.

Type		ΩI	iii 🗔		Scale	Duration	In	Out	Name	Source	ExtEvent	Event ID Age	Smokir
°Å⁰						01:00:00:00			Web url	Web url	Start SCTE-35 Web		
										D:\media\HD_MP4\			
								00:02:46:11		D:\media\HD_MP4\			
									Macro Match Light 4K	D:\media\HD_MP4			
							00:00:00:00			D:\media\HD_MP4			
(A)-						01:00:00:00			Web url	Web url	Start SCTE-35 Web		
· 🖸						00:01:31:00			Block item		Start SCTE-35 Web		
		¢				00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4	D:\media\OST_HD	Start SCTE-35 Web		
						00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4	D:\media\OST_HD			
						00:00:20:01	00:00:00:00	00:00:20:01	The burger drop.mp4	D:\media\OST_HD			
						00:00:30:00	00:00:00:00	00:00:30:00	Rammstein - Europe Stadium	D:\media\OST_HD			
									DoYouKnow_2min_v2.mp4	D:\media\MP4\			
						00:26:00:00	00:00:00:00	00:26:00:00	Speakeasy Drink Creation.mp	1 D:\media\OKKO\Ob			
ilitem's S	canar		20001100-0		_		100-00-00-00-00-00-00-00-00-00-00-00-00-	a	A Item's output events	- 11.00			
	et start ti	ma 0	fset end ti	ma li	Duration	n Nan		Auto		t end time Name		Program ID	Aunil num

Figure 210. Channel OnAir workspace

If there is a playlist, loaded in AirX, you will see information about the clips in different columns:

Type - Shows the type of the playlist element (video clip, block, Live source).

CC - Indicates the existing of subtitle tracks configured for the current playout channel and subtitle files located in the media folder of the broadcast playout server storage (see the **Playout channel addition and setup** chapter for



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details). Gray indicates the number of available tracks, blue indicates the available subtitle files.

External event – the bell icon means that the external event (control command) will be generated during the playback of a primary event of the playlist (video file).

Item's scene – the clapperboard icon means that the primary event of the playlist (video file) has the assigned CG file.

Logo slot – the number in the Logo slot column indicates the Logo slot selected for the primary event.

Playlist loop area – indicates the looped playback for the selected element (group of elements). The number of playback cycles has to be set by the user. Only available in Playlist mode.

Scale - indicates the video display mode of the element: LetterBox, Pan & Scan or Anamorph.

Duration - shows the actual duration of each clip. If a clip has been trimmed, its actual duration will be reduced. The duration of the part to be shown will be displayed in the playlist and will be used for calculation of the starting times of all following clips.

In - displays the In point timecode

Out - displays the Out point timecode

The Duration, IN and OUT points are also editable as well as the Date & time value. **Name** – the editable field that contains the name of a schedule primary event.

Source - the video file location in the storage of the broadcast playout server.

ExtEvent – an incoming external event that triggers the playback of the associated schedule row

Event ID - the ID of the schedule element (video clip, block, Live source)

The rest of the columns are custom and have to be configured in AirX Control app (see the **Channel TAGs and EPG** chapter for details).

The color-coding of the playlist's rows provides additional information to the user:

AirX Channel [New cl	hannel 2] OnAir: Pl	laylist						
Show OnAir Edit	Show columns							
Type CC	I 🛕 I 🞬I		[;]	Scale	Duration	In	Out	Name
					00:02:04:21	00:00:00:00	00:02:04:21	Macro Match Light 4K
		1			00:02:03:17	00:00:00:00	00:02:03:17	Pacifica California
					00:00:19:24	00:00:00:00	00:00:19:24	BARS and TONE.mxf
P (2)					01:00:00:00			Web url
	(3)				00:03:13:11	00:00:00:00	00:03:13:11	Football in Ultra HD
	\sim				00:02:46:11	00:00:00:00	00:02:46:11	Aerial Drone
× 🖂 🔼		2			00:01:31:00			Block item
	¢	2			00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4
1 2		2			00:00:30:00	00:00:00:00	00:00:30:00	The Art of Baking.mp4
1 2					00:02:04:21	00:00:00:00	00:02:04:21	Macro Match Light 4K
		1			00:02:03:17	00:00:00:00	00:02:03:17	Pacifica California
(∞) 5					01:00:00:00			Web url
	~				00:00:20:12	00:00:00:00	00:00:20:12	Speakeasy Drink Creation.mp4
1 2	(6) 🖷							ALIVE Canada 4K_1.mp4
					00:00:30:01	00:00:00:00	00:00:30:01	Out of town Aerial Drone
7)				00:00:20:12	00:00:00:00	00:00:20:12	1-MacCoffee.mpg
	~			-	00:00:20:01	00:00:00:00	00:00:20:01	DoYouKnow_2min_v2.mp4
1 2	8	×	[;]		00:00:20:01			Empty Block
1 2					00:00:20:01	00:00:00:00	00:00:20:01	Speakeasy Drink Creation.mp4
1 2		×	C;1		00:00:30:00	00:00:00:00	00:00:30:00	BARS and TONE.mxf

Figure 211. Color-coding of the playlist's rows



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- 1. Grey standard Schedule Item, video file, primary event.
- 2. Green the currently playing video file. OnAir playback position.
- 3. Orange the element that will be played after the current. Ready for playback position (next in the schedule).
- 4. Blue several elements of the schedule combined into one group a block.
- 5. Light blue Live source or Web URL.
- 6. Red schedule row with Error status. Missing or corrupted primary event, missing secondary event, inactive Live input, etc.
- 7. Yellow schedule row with Warning status. Video file format mismatch with playout channel format (incorrect resolution, fps, etc.)
- 8. Brown Empty Block (Dummy clip).

3. Events pane

lte									.
Layer	Offset start time	Offset end time	Duration	Name	Auto stop 🛛 🕅	Mediafile source	Mediafile Tc.In.	Mediafile Tc.Ou	t.
1	00:00:10:00	00:25:50:00	00:00:08:00	Tag Now					
2									
3									
4									
5									
🏩 Ite	em's output events								џ
0 Ite	em's output events Offset start time	Offset end time	Name				ted Preroll (sec.)	Event ID	џ
		Offset end time	Name SCTE Start				ted Preroll (sec.)	Event ID 0	Ļ
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#	Offset start time			Program	ID Avail nu	um Avail expect			Ţ

Figure 212. Item's Scenes and Item's output events tabs

The Events pane contains the following tabs:

Item's Scenes – CG files assigned to the selected schedule row (see the **Item's Scenes window. Channel CG** chapter for details).

Item's output events - external events assigned to the selected schedule row. For example, the ad markers generated by the playout channel. See the **Item's Output Events window** chapter for details.

4. Status bar

The status bar is located at the bottom of the AirX Channel Manager window.

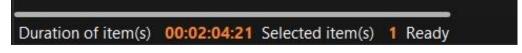


Figure 213. The AirX Channel Manager Status bar

The Duration of item(s) field shows the total playlist duration

The **Selected item(s)** field shows the number of simultaneously selected schedule rows.

Channel OnAir window, Schedule mode

The Channel OnAir window contains the following blocks and menus, if the Schedule mode is selected:



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ype	CC				rch 2023, Friday & time	Duration	In	Out	Name	Source	ExtEvent	Event ID	Age	Smokin
				G.										
Ale-														
						00:02:46:11	00:00:00:00	00:02:46:11	Aerial Drone	D:\media\HD_MP4\				
	82						00:00:00:00		Macro Match Light 4K	D:\media\HD_MP4\				
										D:\media\HD_MP4\				
12-					2023-03-17 02:20:28:09	01:00:00:00			Web url	Web url	Start SCTE-35 Web			
					2023-03-17 03:20:28:09	00:01:31:00			Block item		Start SCTE-35 Web			
					2023-03-17 03:20:28:09	00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4	D:\media\OST_HD	Start SCTE-35 Web			
					2023-03-17 03:20:48:21	00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4	D:\media\OST_HD				
					2023-03-17 03:21:09:08	00:00:20:01	00:00:00:00	00:00:20:01	The burger drop.mp4	D:\media\OST_HD				
					2023-03-17 03:21:29:09		00:00:00:00	00:00:30:00	Rammstein - Europe Stadium	D:\media\OST_HD				
									Speakeasy Drink Creation.mp	4 D:\media\MP4\				
									DoYouKnow 2min v2.mp4					
10-					2023-03-17 03:50:17:17	01:00:00:00			Web url	Web url	Start SCTE-35 Web			
	R 2									D:\media\HD MP4\				
					2023-03-17 04:53:31:03	00:02:46:11	00:00:00:00	00:02:46:11	Out of town Aerial Drone	D:\media\HD_MP4\				
	11 2 11 2	¢	000	9.9.9				00:02:46:11		D:\media\HD_MP4\				



1. Control me	enu				
AirX Channel [I	New chan	inel 2] OnAir: So	chedule		
Show OnAir	Edit S	how columns	◀ ⊒ ►	17 March 2023, Friday	

Figure 215. Control menu of the Channel OnAir Schedule window

The title bar of the Channel OnAir window contains the name of the current playout channel in the square brackets. Here you can also see the **Schedule** mode is selected.

- Click the **Show OnAir** button to jump to the currently playing schedule row.
- Click the Edit button to expand the Channel schedule editor drop-down list. The most of list items are similar to the Channel playlist editor drop-down list; see the Channel OnAir window, Playlist mode chapter and the Figure 208. Channel playlist editor drop-down list for details.

Schedule-specific menu items:

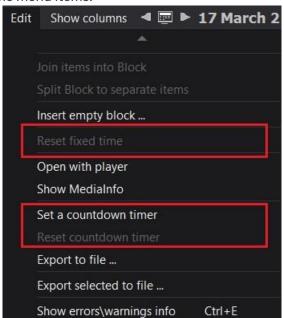


Figure 216. Channel schedule editor drop-down list's items



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- Reset fixed time reset the Fixed time flag, set on the selected schedule row. If there is an Underrun block before Fixed time, resetting Fixed time will also reset the Underrun block.
- **Set a countdown timer** set a countdown timer showing the remaining time until the start of playback of the selected schedule row.
- **Reset countdown timer** reset the previously set countdown.
- **Show columns** menu contains a list of columns of the OnAir window workspace. The columns can be enabled/disabled by checking and unchecking the corresponding checkboxes. All items in the list below the Event ID are custom and must be configured in AirX Control app (see the **Channel TAGs and EPG** chapter for details).

The Channel Schedule list of the columns is similar to the Channel Playlist Show columns list.

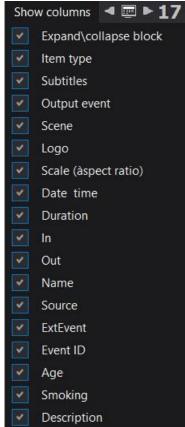


Figure 217. Show columns menu

- Date picker

Date picker allows you to open the channel schedule for the selected date in the workspace of the OnAir window

Show OnAir	Edit	Show o	olumns	۹ 💻	17 Ma	rch 2023, Friday	
Type	CC		1 1111		Scale Dat	e & time	

Figure 218. Date picker



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Use the **Forward** and **Back** icons next to the selected date to scroll through the channel's schedules by day. You can select a schedule for any date using the **Calendar** tool next to the selected date.

2. Chanel OnAir window workspace

This is the main part of the AirX interface, dedicated to the Schedule (dated playlist) visualization.

When you launch AirX Channel Manager, depending on your startup settings, you will see an empty window, and you will have to load (or create) a schedule. Otherwise you will see the opened schedule.

13 13 14 14 14 14 15 14 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 16 15 15 15 16 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16 16	(A) 12			0					Name	Source	ExtEvent	Event ID	
Image: Start Science S	Ar			~									
1 2 2 2023 03.17 02.120.224 000024012 00000000 00024621 Aerial Tome Dymedia/HD_MPA O+ 11 1 1 1 1 1 00002001 000024012 Monolouidu 000024621 Aerial Tome Dymedia/HD_MPA O+ 11.3 1 1 1 0 2023 03.17 02.158.417 0000200421 00000000 000224621 Aerial Tome Dymedia/HD_MPA O+ 1.1 1 1 1 0 2023 03.17 02.158.417 0000200421 00000000 0000246317 Pacifics California D/ymedia/HD_MPA O+ 1.1 2 1 0 2023 03.17 02.258.49 0100.00000 000024317 Pacifics California D/ymedia/HD_MPA O+ 1.1 2 2 2023 03.17 02.258.49 00002012 00000000 000023012 Pacifics California D/ymedia/D5T_HD O+ 1.2 2 2023 03.17 03.258.49 00002012 00000000 0000023012 Paymedia/D5T_HD O+ <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
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12 2 2023-03-17 03:21:29:09 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 000002000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 000000000 00000000 <td>12</td> <td></td> <td></td> <td></td> <td>2023-03-17 03:20:48:21</td> <td></td> <td>00:00:00:00</td> <td></td> <td>The Art of Baking.mp4</td> <td>D:\media\OST_HD</td> <td></td> <td></td> <td></td>	12				2023-03-17 03:20:48:21		00:00:00:00		The Art of Baking.mp4	D:\media\OST_HD			
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L + · · · · · · · · · · · · · · · · · ·						00:00:30:00	00:00:00:00		Rammstein - Europe Stadium	D:\media\OST_HD			
2023-03-17/03:24:17:17 00:26:00:00 00:00:00 Do?ouknow_2min_v2.mp4 D:\media\OKKO\									Speakeasy Drink Creation.mp	4 D:\media\MP4\			
1.2 C 2023-03-17 03:50:17:17 01:00:00:00 Web url Web url Start SCTE-35 Web 12+	12												
	0x0 1.2					01:00:00:00			Web url	Web url	Start SCTE-35 Web		
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□ □ □ □ □ □ □ □ □ □ □ 02023-03-17 04:53:31:03 00:02:46:11 00:00:00:00 00:02:46:11 Out of town Aerial Drone D:\media\HD MP4\ 0+					2023-03-17 04:53:31:03	00:02:46:11	00:00:00:00	00:02:46:11	Out of town Aerial Drone	D:\media\HD MP4\			

Figure 219. Channel OnAir workspace

The columns of the Schedule grid are mostly similar to the Channel Playlist OnAir window. See the **Channel OnAir window**, **Playlist mode** chapter and **Figure 210. Channel OnAir workspace** for details.

The difference in the workspace columns is due to the fundamental architectural difference between the Schedule and the Playlist.

Schedules are chronologically organized and time-accurate playlists of content with secondary events like CG, and control commands. Each schedule row has a specific Date&time field. The Schedule playback is executed sequentially and once.

Playlists are ordinary lists of content which are sequenced of video files with secondary events like CG, and control commands. The Playlist playback is looped.

AirX Channel []	New char	inel 2] On/	Air: Schedule	;		
Show OnAir	Edit S	how colur	nns 🖪 💻	▶ 17	March 2023, Friday	
Type	CC	ĻΙ		Scale	Date & time	Duration
					Q 2023-03-17 01:10:00:00	00:00:19:24
((*)) A -					Q 2023-03-17 01:10:19:24	01:00:00:00
	2				2023-03-17 02:10:19:24	00:03:13:11
	2				Q 2023-03-17 02:13:33:10	00:02:46:11
	2				Q 2023-03-17 02:16:19:21	00:02:04:21
			1		Q 2023-03-17 02:18:24:17	00:02:03:17
((*)) A (Q 2023-03-17 02:20:28:09	01:00:00:00
✓ ⊡			2		Q 2023-03-17 03:20:28:09	00:01:31:00
	12	Ċ	2		2023-03-17 03:20:28:09	00:00:20:12

Thus, the Channel OnAir window has additional columns in the Schedule mode:

Figure 220. Channel OnAir workspace in the Schedule mode



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- Date & time this column shows the actual starting date and time for each clip. The following clips hold positive times calculated according to the current time and the duration of the preceding clips. If there has been a Jump or Skip command or a clip has been trimmed, the starting times of the following clips will be recalculated accordingly. Date & time column is only available in Schedule mode.
- The Date & time column contains an additional Set fixed time element that allows fixing the starting time of the selected clip. If the Set fixed time flag is set, the selected schedule row will keep the Date & time value, regardless of editing the preceding rows.

The color-coding of the Schedule rows is similar to the Channel Playlist OnAir window and provides additional information to the user. See the **Channel OnAir window, Playlist mode** and **Figure 211. Color-coding of the playlist's rows** for details.

In addition to the color-coding options described above, the OnAir schedule (due to its chronological order) has a color-coding of Underrun and Overrun conditions.

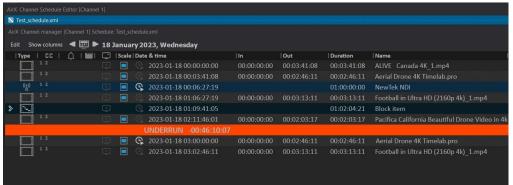


Figure 221. Underrun

AirX Channel Schedule Editor [Channel	nel 1]						
Test_schedule.xml							
AirX Channel manager [Channel 1] S							
Edit Show columns 🖪 📼 🕨	18 Janu	ary 202	23, Wednesday				
Туре СС 🛕 🖮	🖵	Scale Da	ite & time	In	Out	Duration	Name
			2023-01-18 00:00:00:00	00:00:00:00	00:03:41:08	00:03:41:08	ALIVE Canada 4K_1.mp4
12			2023-01-18 00:03:41:08	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
((*)) 12 A		G	2023-01-18 00:06:27:19			01:00:00:00	NewTek NDI
12			2023-01-18 01:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4
		0.9	2023-01-18 01:09:41:05			01:00:00:00	NewTek NDI
			2023-01-18 02:09:41:05	00:00:00:00	00:02:04:21	00:02:04:21	Macro Match Light [4K Slow Motion]_1.mp4
			OVERRUN +00:11:46:01				
1 2		🔲 (G	2023-01-18 02:00:00:00	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
1 2			2023-01-18 02:02:46:11	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4

Figure 222. Overrun

For a detailed description of the Underrun and Overrun conditions, see the **Live** streams and frequently changing schedules. Live video workflow. chapter.

3. Events pane



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it lt	em's Scenes								- Marina
Layer	Offset start time	Offset end time	Duration	Name Aut	to stop Mee	diafile source 🏻 🛛 🕇	Vlediafile Tc.In.	Mediafile Tc.Out.	
1	00:00:10:00	00:25:50:00	00:00:08:00	Tag Now					
ļ It	em's output events	1-10	1	1		1		1 1	
₽ It	Offset start time	Offset end time	Name		Avail num	Avail expected		Event ID	1887 1987
₽ It		Offset end time 00:00:00:00	Name SCTE Start	Program ID ()		Avail expected	i Preroli (sec.) 10	Event ID 0	
₽ It	Offset start time				Avail num				
ļ It	Offset start time				Avail num				
A It	Offset start time				Avail num				
5 # 1 2 3 4	Offset start time				Avail num				



The Events pane contains the following tabs:

Item's Scenes – CG files assigned to the selected schedule row (see the **Item's Scenes window. Channel CG** chapter for details).

Item's output events - external events assigned to the selected schedule row. For example, the ad markers generated by a playout channel. See the **Item's Output Events window** chapter for details.

4. Status bar

The status bar is located at the bottom of the AirX Channel Manager window.



Figure 224. The AirX Channel Manager Status bar

The **Duration of item(s)** field shows the total playlist duration

The **Selected item(s)** field shows the number of simultaneously selected schedule rows.

Item's Scenes window. Channel CG

The Item's Scenes is a window of CG scenes assigned to the selected schedule row. Up to eight multi-layer dynamic scenes can be assigned to each row at the same time. Inside the scene, the number of overlays and CG elements is unlimited.

in Ite									
Layer	Offset start time	Offset end time	Duration	Name	Auto stop	Mediafile source	Mediafile Tc.In.	Mediafile Tc.Out.	
1	00:00:10:00	00:25:50:00	00:00:08:00	Tag Now	Sec. 19				
5									

Figure 225. Item's Scenes window

You can work with the Channel CG in the **Scene Editor** app that is a built-in CG editor for creation of on-air graphic design scenes and/or graphics conversion to the internal graphic scene format for AirX software. It allows you to operate with CG of various levels of complexity from a simple overlay of a static logo to a multilayer dynamic design using PIP, FILL + KEY, RSS, etc.

The Item's Scenes window contains the following columns:

- Layer - the layer number



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- Offset start time the start time of the CG element relative to the start of the primary event
- Offset end time the end time of the CG element relative to the end of the primary event
- **Duration** the duration of the CG element
- **Name** the name of the CG element
- **Auto stop** the checkbox that stops the playback of the CG element simultaneously with the end of the primary event. If the box is unchecked, the secondary event (graphic scene) will be played to the end, even if its duration is longer than the duration of the primary event.
- Mediafile source the location of the Scene file in the server storage
- Mediafile Tc.In. the In timecode of the Scene
- Mediafile Tc.Out. the Out timecode of the Scene

Item's Output Events window

The Item's Output Events is a window of output events assigned to the selected schedule row. Up to eight output events or plugins can be assigned to each row at once (Events - SCTE or Plugins - GPO). See the **AD insertion (DAI) workflow** chapter for details.

<u> </u>									ф.
#	Offset start time	Offset end time	Name	Program ID	Avail num	Avail expected	Preroll (sec.)	Event ID	
1	00:26:00:00	00:00:00:00	SCTE Start			255	10		
2									
3									
4									
5									

Figure 226. Item's Output Events window

The Item's Output Events window contains the following columns:

- # the event number
- **Offset start time** the start time of the output event relative to the start of the primary event
- **Offset end time** the end time of the output event relative to the end of the primary event
- Name the name of the output event
- **Program ID** the ID of the selected program
- Avail num the advertising slot identifier among the program slots
- Avail expected the total number of ad slots inside the program
- **Preroll (sec.)** the time interval from the arrival of the command to the execution of the splicing event. The recommended value is 4 sec.
- **Event ID** event identifier

Channel Audio ctrl window

The **Channel Audio ctrl window** is intended for visualization and control of the channel sound settings.

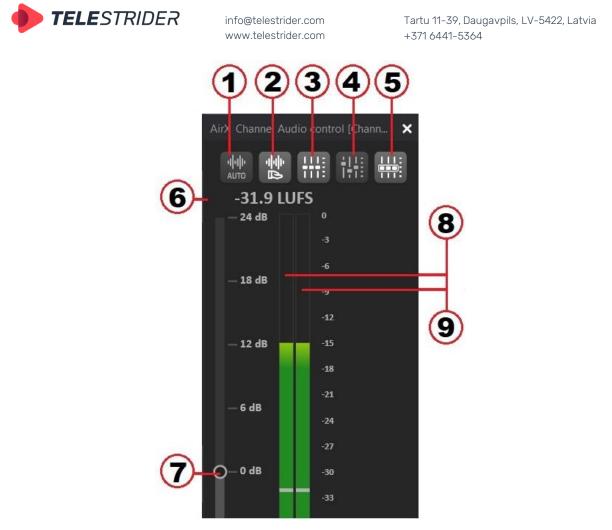


Figure 227. Channel Audio ctrl window

The window contains the following indicators and control buttons:

- 1. **Set enable auto audio gain** button automatic normalization of the sound volume. In auto mode the volume adjusting with slider 7 is not available.
- 2. **Set enable manual audio gain** button manual normalization of the sound volume. In manual mode the sound volume can be changed with slider 7.
- 3. **Set normal gain for all audio streams** button reset the manual audio volume settings for all audio streams. When you click this button, slider 7 will automatically move to a value of 0 dB
- 4. Set gain edit for one stream button manual normalization of the sound volume of selected audio stream.
- 5. **Set gain synchro edit for all stream** button enable or disable audio volume synchronization for all audio streams
- 6. Volume meter an indicator that displays the current value of the sound volume level (in LUFS).
- 7. Volume slider
- 8. Left channel sound volume scale
- 9. Right channel sound volume scale

Channel Logo Slot window

The Channel Logo Slot window is intended to control and manage the display modes of the channel logo.



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+371 6441-5364

AirX Channel Logo slot [New channel 2]
I LOGO_03
2 CH3_logo
3 Empty slot
4 Empty slot



The system menu of the window contains the following buttons:

Turn logo OFF - self-explanatory

Logo by schedule (default mode) - turn on the logo according to the channel schedule.

Start selected logo – start logotype from the selected slot **Clear selected logo slot** – clear the selected logo slot

When you turn on the logo in the selected slot, the logo line will be highlighted in green (see the figure above).

You can call the context menu that duplicates the system menu of the window by right-clicking on the window's workspace.

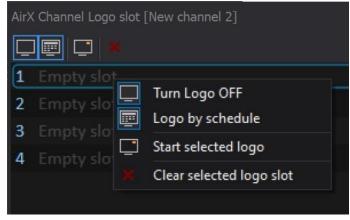


Figure 229. Channel Logo Slot context menu

Channel Manual GFX ctrl window

The Channel Manual GFX ctrl window allows you to launch CG objects in manual mode. This can be useful for launching the additional CG scenes in manual mode on top of auto-played scenes.



info@telestrider.com Tartu 11-39, Daugavpils, LV-5422, Latvia www.telestrider.com +371 6441-5364 × AirX Channel Manual GFX [New channel 2] 0% Test scroll2 1 2 0% Clock [] 3 0% PIP3 001 Δ 0% Live test 0% 5 Live test_01 0% 6 Crawl 02

Figure 230. Channel Manual GFX ctrl window

The system menu of the window contains the following buttons:

- Start selected manual GFX start playback of CG objects selected in the window's workspace
- Pause selected manual GFX pause playback and also disable the CG objects selected in the window's workspace
- Pause selected manual GFX and set visible pause the playback of CG objects selected in the window's workspace. Show the current freeze frame of the selected object
- Stop selected manual GFX stop playback of CG objects selected in the window's workspace
- Set selected manual GFX Loop mode start looping playback of CG objects selected in the window's workspace
- Remove selected manual GFX remove CG objects selected in the window's workspace

The Channel Manual GFX ctrl window contains the following columns:

- 1. CG object number
- 2. Status indicator of a CG object: CG object playback status (Play, Stop, Pause)
- 3. The looped playback of CG objects selected in the window's workspace indicator
- 4. CG object playback percentage (progress bar, in percent)
- 5. Name of the CG object

If you right-click on the window's workspace, a context menu will show you the only **Stop selected auto GFX** item.

Channel Auto GFX ctrl window

The Channel Auto GFX window allows you to control and forcibly stop scheduled CG objects. That is, its only function is the forced manual stop of on-air graphics.

TELESTRIDER	info@telestri www.telestr		Tartu 11-39, Daugavpils, LV-5422, Latvia +371 6441-5364
AirX o	Channel Auto Gf	FX [New channel 2]	×
1			
2			
3			
4 🕟	00:00:01	Name_Age_Smoking	g
5 ⋗	00:01:01	Rall_crawl_Manual	
6 ⊳	00:01:01	Rall_crawl_RSS	
7			

Figure 231. Channel Auto GFX window

As you can see in the figure above, the system menu of the window contains the only button **Stop selected auto GFX** to immediately stop the playback of CG objects selected in the window's workspace.

The Channel Auto GFX ctrl window contains the following columns:

- 1. CG object number
- 2. Status indicator of a CG object (Play, Stop)
- 3. The duration of the CG object
- 4. Name of the CG object

If you right-click on the window's workspace, a context menu will show you the only **Stop selected auto GFX** item.

Channel Player window

The Channel Player window allows previewing, non-destructive trimming, and exporting parts of the currently selected clip back to the schedule.



Figure 232. Channel Player window



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The Player window contains the following elements:

The system menu with tabs;

Video

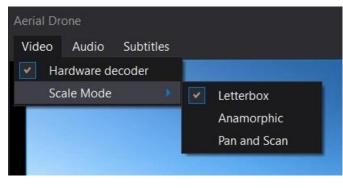


Figure 233. Video tab menu items

The **Video** tab contains a **Hardware decoder** item to enable hardware accelerated video decoding and a **Scale mode** drop-down list to select the video Scale mode.

ATTENTION: When changing the Scale mode, the video will not only be played in the player with the specified parameter, but will also be added to the schedule and broadcast with the value set in the player.

A	u	d	i	0
	-	-	-	-

Au	idio device		Conexant ISST A	udio		
As	signment of audio tra	cks				
Lis	ten Audio		Stream 1 (ara)	*	~	Pair 1
Mi	ute		Stream 2 (eng)	×		

Figure 234. Audio tab menu items

The **Audio** tab contains an **Audio device** drop-down list of available audio playback devices. The **Listen Audio** drop-down allows you to select the audio stream to play. **Mute** turns off the sound in the current video.

In addition, the Audio tab contains the **Assignment of audio tracks** item, clicking on which opens an additional window of the built-in audio mixer:



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Assignment of audio tracks	×
Stream 1:	
eng ; AAC (Advanced Audio Coding); Channels: 2; 4800)0Hz 👻
Stream 2:	
eng ; AAC (Advanced Audio Coding); Channels: 2; 4800	00Hz 👻
Stream 3:	
eng ; AAC (Advanced Audio Coding); Channels: 2; 4800	
Stream 4:	
eng ; AAC (Advanced Audio Coding); Channels: 2; 4800	
Stream 5:	
Stream 6:	
Stream 7:	
Stream 8:	
	OK Cancel

Figure 235. Assignment of audio tracks

The assignment of audio tracks is rational when the video contains several different audio tracks.

Subtitles

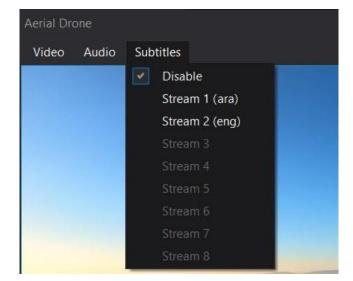


Figure 236. Subtitles tab menu items



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The **Subtitles** tab contains a list of subtitle streams available for playback and a **Disable** button to turn them off.

ATTENTION: The list does not show the subtitle *.srt or *.stl files for a specific video in the server storage, but the subtitle language streams configured as Enabled in AirX Channel app.

- The **Preview** window (the main window of the Channel Player)
- Left and right channel **volume meters**



Figure 237. The Preview window and volume meters

- Timeline and Channel Player control buttons

The **video player timeline** consists of two bars:

The timecode bar (upper) is used to set the **In** and **Out** points for video playback, as well as to show a current frame.

The timecode zoom bar (bottom) is for scaling the time segment selected on the timecode bar. Move the round markers to scale.

Timecode counters:



Figure 238. Timecode counters

- 1. **Input** the In point timecode of the selected video segment (Trim In)
- 2. Segment duration the duration of the selected video segment (Trim)
- 3. **Output** the Out point timecode of the selected video segment (Trim Out)
- 4. Current time code current video playback time code
- 5. **Clip duration** full video duration

Channel Player control buttons:



Figure 239. Channel Player control buttons



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- Set marker timecode In
- Go to marker timecode In
- Step previous go to the previous frame of the video
- Play start video playback
- Step next go to the next frame of the video
- Go to marker timecode Out
- Set marker timecode Out
- Apply changes to item

Manual Events ctrl window

The **Manual Events ctrl** window is intended for manual launch of the external events. Here you can operate with SCTE markers and GPO commands.

AirX Ch	annel Manual Events [New channel 2]	×
1	SCTE Start	
2	SCTE Stop	
3	Switch 1_2	
4	Switch 1_3	
5	Empty Event Layer	
6		
7	Empty Event Layer	
8	Empty Event Layer	

Figure 240. The Manual Events ctrl window

This window will allow you to launch the external event at any time, without the reference to the executable OnAir schedule,

Use Drag & Drop to add the external events to the Manual events window from the Chanel resource tree (Events or Plugins branches). AirX broadcast automation allows you to add and manage up to 16 manual events simultaneously.

After the events are added, you can select any of them and click Play in the top menu of the window.

Channel command pane

The **Channel command** pane allows you to create a custom layout for the quick command control. You can manage the playback of the AirX schedule, the external events or channel CG. The Channel command pane is an additional app window, so the custom layout can be located on a separate touch-panel and used as an external control device.

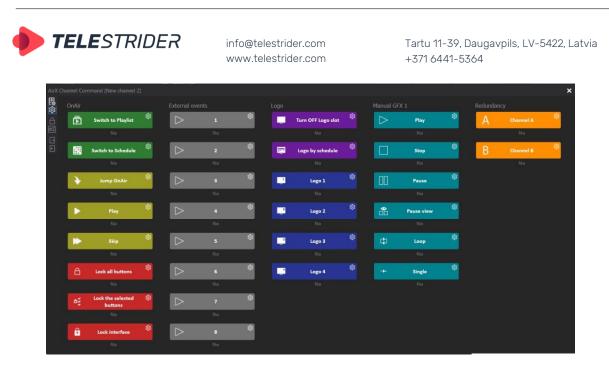


Figure 241. AirX Channel Command pane

The figure above shows an example of customizing the user pane with several groups of control commands. When first launched, the window will only contain the control menu on the left:

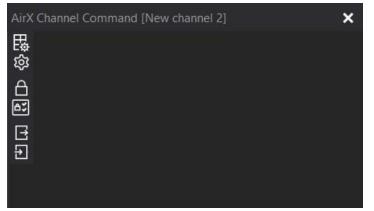


Figure 242. AirX Channel Command initial window, control menu

- **Show settings dialog** opens an additional Command control settings window for creating and editing groups of commands. This settings window allows you to create a custom layout of buttons that will be located on the Command control pane
- **Set or unset editor mode** activates the setting mode of the buttons created before. Allows you to assign a specific action to every button
- Lock all command locks all user-created control buttons
- **Lock custom selected command** locks only those buttons that have the corresponding flag (it can be set when creating the button)
- **Export current command layout to file** allows you to export the created custom layout to an external *.xml file
- **Import and change current command layout from file** allows you to load the previously created layout from the *.xml file into the Channel Command window. If there are any buttons in the pane, all current buttons will be lost.

How to: create a custom layout:



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1. Open the initial window of the AirX Channel Command. Open the Command control settings window by pressing a **Show settings dialog** button.

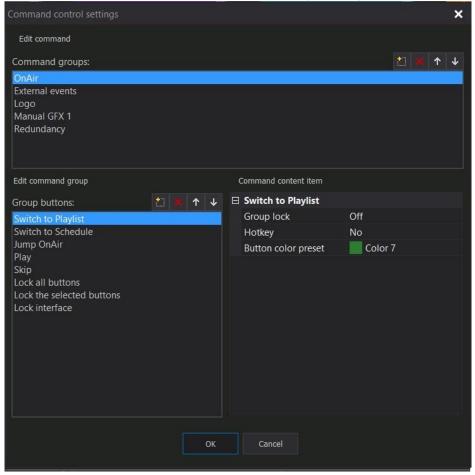


Figure 243. Command control settings

The window contains three blocks:

Edit command - Create a group of control commands

- **New** create a new group of commands
- Delete delete a selected group
- Move Up move the group higher in the list
- Move Down move the group lower in the list

Edit command group - Create the buttons in the group of control commands

- **New** create a new button
- **Delete** delete a selected button
- **Move Up** move the button higher in the list
- Move Down move the button lower in the list

Command content item - Edit the button properties

- **Group lock** assign a GroupLock flag to the button. All buttons in the layout that have the lock flag can be disabled by pressing Lock all command in the main window of the Channel Command window.
- Hotkey assign the hotkey (duplicate keyboard input) for each button in the layout
- **Button color preset** –assign a color for each button in the layout. Color customization provides maximum usability of the Quick Commands bar.

Use the top **Edit command** block to create groups of commands. Add a group by pressing New or delete it by pressing Delete.



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- 2. Select the group of commands with the mouse and go to the **Edit command group** block. Create control buttons inside the Group buttons window. Creating and deleting separate buttons is similar to creating groups.
- 3. For each button created in the previous step, configure the operation and display settings: select the button and assign the color to the button, set hotkey and GroupLock flag if necessary in the right Command content item block.
- 4. When the configuration is done, click **OK** to save it.

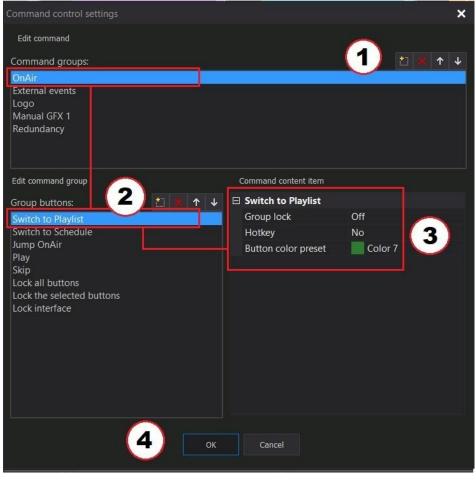


Figure 244. Command control settings

- 5. In the main window of the AirX Channel command pane you will see the custom layout you created. Click **Show settings dialog** again to make changes. If no changes are required, start the editor mode to assign a specific action to every button.
- 6. Click **Set or unset editor mode** in the left menu. You will see a gear icon on all buttons. This icon opens the context menu for the actions assignment. The menu contains the following items:

Command button property - does not assign any action but allows you to assign/change the color of the button and the GroupLock flag.



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OnAir			External events			Logo	
D	Switch to Playlist	ŵ	Command button property	×		Color 1)FF Logo slot
	No		GroupLock			Color 2	
			OnAir			Color 3	
	Switch to Schedule	τĝ	Manual event play			Color 4) by schedule
	No		Logo slot control			Color 5	
			Manual GFX 01			Color 6	
•	Jump OnAir	10	Manual GFX 02			Color 7	Logo 1
	No		Manual GFX 03			Color 8	
			Manual GFX 04			Color 9	
	Play	10	Manual GFX 05			Color 10	Logo 2
	No		Manual GFX 06		A	Set mark lock	
			Manual GFX 07		а	Set mark unlock	
	Skip	10	Manual GFX 08		1 1 1 1 1		Logo 3

Figure 245. Command button property

Group Lock – assigns the GroupLock flag to the selected button:

Command button property	•		
GroupLock		۵ž	Lock select
OnAir	×	A	Lock all
Manual event play		P	Lock OnAir
Logo slot control	۲		
Manual GFX 01	Þ		
Manual GFX 02	Þ		
Manual GFX 03	Þ		
Manual GFX 04	Þ		
Manual GFX 05	×		
Manual GFX 06	Þ		
Manual GFX 07	Þ		
Manual GFX 08	Þ		

Figure 246. GroupLock

- Lock select locks only those buttons that have the corresponding flag set
- Lock all locks all user-created control buttons
- Lock OnAir locks the AirX Play Channel Manager interface

OnAir – duplicates the control buttons of the Channel Manager main window (see the Figure 185. Channel Manager main window (part 2)).



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Command button property			
GroupLock	۲		
OnAir		►	OnAir play by server time
Manual event play	۲	∢	OnAir jump
Logo slot control	۲	⋫	OnAir skip
Manual GFX 01	۲	Þ	OnAir switch to playlist
Manual GFX 02	×		OnAir switch to schedule
Manual GFX 03	۲	А	Redudancy A
Manual GFX 04	۲	В	Redudancy B
Manual GFX 05	۲		
Manual GFX 06	•		
Manual GFX 07	۲		
Manual GFX 08	×		

Figure 247. OnAir

- **OnAir play by server time** -start the playback of a schedule according to the current server time.
- **OnAir jump** interrupt the currently playing clip and jump to the currently selected (highlighted) item in the schedule.
- **OnAir skip** interrupt the currently playing clip and jump to the next item in the schedule.
- **OnAir switch to playlist** switch the channel mode from the Schedule to the Playlist
- **OnAir switch to schedule** switch the channel mode from the Playlist to the Schedule
- Redundancy A control button for switching between the schedules of servers A and B when working in redundancy mode. Switch to the server A schedule
- Redundancy B control button for switching between the schedules of servers A and B when working in redundancy mode. Switch to the server B schedule

Manual event play – triggers the external event assigned to the corresponding slot in the Manual events ctrl window (see the **Manual Events ctrl window** chapter for details).



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Command button property	•		
GroupLock	•		
OnAir	۶		
Manual event play		\triangleright	Manual event play - 01
Logo slot control	€	\triangleright	Manual event play - 02
Manual GFX 01	•	\triangleright	Manual event play - 03
Manual GFX 02	≯	\triangleright	Manual event play - 04
Manual GFX 03	۱.	\triangleright	Manual event play - 05
Manual GFX 04	≯	\triangleright	Manual event play - 06
Manual GFX 05	۲	\triangleright	Manual event play - 07
Manual GFX 06	۶	\triangleright	Manual event play - 08
Manual GFX 07	•	\triangleright	Manual event play - 09
Manual GFX 08	∢	\triangleright	Manual event play - 10
		\triangleright	Manual event play - 11
		\triangleright	Manual event play - 12
		\triangleright	Manual event play - 13
		\triangleright	Manual event play - 14
		\triangleright	Manual event play - 15
		\triangleright	Manual event play - 16



Logo slot control - assigns the following actions with the channel logo to the selected button:

Command button property	×	
GroupLock	►	Turn off logo slot
OnAir	►	Logo slot by schedule
Manual event play	•	
Logo slot control		Logo slot 01
Manual GFX 01	×	Logo slot 02
Manual GFX 02	Þ	Logo slot 03
Manual GFX 03	Þ	Logo slot 04
Manual GFX 04	•	Logo slot 05
Manual GFX 05		Logo slot 06
Manual GFX 06	Þ	Logo slot 07
Manual GFX 07	×.	Logo slot 08
Manual GFX 08	•	Logo slot 09
		Logo slot 10
		Logo slot 11
		Logo slot 12

Figure 249. Logo slot control

- Turn off logo slot - self-explanatory



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- **Logo slot by schedule** turn on the logo according to the channel schedule.
- Logo slot 01-16 enable the logo assigned to the corresponding slot in the Channel Logo slot window (see the Channel Logo Slot window chapter for details).

Manual GFX 01-08 assigns the following actions with a CG scene assigned to the corresponding slot in the Manual GFX ctrl window to the selected button (see the **Channel Manual GFX ctrl window** chapter for details)

Command button property		
GroupLock	•	
OnAir	×	
Manual event play	M	
Logo slot control	×	
Manual GFX 01		D Manual GFX - Play 01
Manual GFX 02	×	Manual GFX - Stop 01
Manual GFX 03	M	Manual GFX - Pause 01
Manual GFX 04	×	Anual GFX - Pause View 01
Manual GFX 05	M	🗘 Manual GFX - Loop 01
Manual GFX 06	×	→ Manual GFX - Single 01
Manual GFX 07	M	
Manual GFX 08	×	

Figure 250. Manual GFX 01-08

- Manual GFX Play start playback of CG object
- Manual GFX Stop stop playback of CG object
- Manual GFX Pause pause playback and also disable the CG object
- **Manual GFX Pause View** pause the playback of CG object, show the current freeze frame of the selected object
- Manual GFX Loop start looping playback of CG object
- Manual GFX Single start playback of CG object. Play the CG object once, regardless of its settings.
- After all buttons are configured and actions are assigned, exit the editor mode by clicking again on **Set or unset editor mode** in the left menu. The Channel command pane is set up and ready to go.

Schedule Editor window

Schedule Editor is the additional window for editing Schedules and Playlists.

Open the schedule for editing in the Schedule Editor window using the **Open for edit** item of the context menu or by double-clicking on the schedule name.

The Schedule Editor window differs from the current air schedule by its title bar: it contains the name of the current channel and the name of the schedule file you are currently working with.

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AirX Channel Source [New channel 2] Channel resources () Live Scene Cogo	AirX Channel Schedule Editor [New channel 2]
Eind Ctrl+F Open for edit Create new Remove Rename Cut Ctrl+X Copy Ctrl+C Paste Ctrl+V	Item 's Scenes Layer Offset start time Offset end time Duration Name Duration of item(s) 00:00:00:00 Selected item(s) 0 Ready

Figure 251. The additional Schedule Editor window

You can open several schedules and playlists at the same time and work with them in one window with the simple navigation. You can move and group windows as you wish:

AirX Channel Schedule Editor								
4_Banner.xml								
Test_schedule.xml	Ē 4	Banne	r.xml	×	Weekend_mor	ning.xml	Friday_Primetime.	xml 3_Subtitles.xml
AirX Channel manager [New o						6.	الدراد مراد	Distilica
Edit Show columns						30	hedul	e Playlist
Type CC 🛕	1		I [;]	Scale	Duration	In	Out	Name
1 2					00:00:30:06	00:00:00:00	00:00:30:06	Commercial - Make It Your Moment.mp4
1 2					00:00:20:00	00:00:00:00	00:00:20:00	Dunkin Iced Coffee.mp4
1 2					00:00:30:00	00:00:00:00	00:00:30:00	Kroger - Simple Truth.mp4
								with the th

Figure 252. Navigating the Schedule and Playlist tabs in the Schedule Editor window

Edit windows context menu

It is not a separate window. It is the context menu of the **View** item of the system menu in the Channel Manager window. It is activated only if there are opened schedules/playlists in the Schedule Editor additional window.



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۲	[New channel 2] Air	rX Channel r	manager
Viev	v Help Lock inter	face	
~	Source	Alt+1	
*	OnAir	Alt+2	
	Logo Slot	Alt+3	
~	Audio ctrl	Alt+4	▲ 4_Banner.xml
	Manual GFX ctrl	Alt+5	Test_schedule.xml 🔁 4_Banner.xml × 🔛 Weekend_morning.xml 🔛 Friday_Primetime.xml
	Auto GFX ctrl	Alt+6	AirX Channel manager [Channel 1] Playlist 4_Banner.xml
~	Preview	Alt+7	Edit Show columns Schedule Playlist
	Player	Alt+8	Type CC 介 ₩ ⊑ [ʃ] Scale Du ation In Out Name
	Manual Events ctrl	Alt+9	🔲 🚺 1.2 🔛 🔄 🗊 🗐 00 <mark>00:30:06 00:00:00 00</mark> :00:30:06 Commercial- Make It Your N
	Command control	Alt+0	1 2
~	Schedule Editor		🚺 🕺 🔛 🖾 🖪 00 <mark>00:30:00 00:00:00 00</mark> :00:30:00 Kroger - Sim <mark>p</mark> le Truth.mp4
	Edit windows	*	Schedule: Test_schedule.xml
_	Countdown		Playlist: 4_Banner.xml
	Visible Past OnAir Ite	ems	Schedule: Weekend_morning.xml
	Show command but	tons 🕨	Schedule: Friday_Primetime.xml
	Layout manager		Playlist: 3_Subtitles.xml
	Layout manager		Them's Scenes I Device Scenes
			Layer Offset start time Offset end time Duration Name # Offset start time Offset end time
	Reset layout to defai	ult	

Figure 253. Schedule Editor navigation by the Edit windows context menu

Countdown window

In the countdown window you can see a countdown timer showing the remaining time until the start of playback of the selected schedule row. This window is only available in the Schedule mode.

To start the countdown, select the schedule row below the executed one at the time of the schedule playback and call the context menu. Select the Set a countdown timer item:

AirX Channel [Channel 1] OnAir: Schedule	Logo slot Manual exit					
Show OnAir Edit Show columns Type CC A MIN C I	Expand all blocks Expand selected blocks Collapse all blocks	uration 0:02:46:11	In 00:00:00:00	Out 00:02:46:11	Name Aerial Drone	
	Collapse selected blocks Join items into Block	0:03:1 0:02:4	Channel Countdowr			× _{ie}
	Split Block to separate items Insert empty block	0:02:0 0:02:0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Reset fixed time Open with player	0:00:2 0:00:2 0:00:2	00)·0F	5:14	[01
	Show MediaInfo Set a countdown timer Paget countdown times	0:00:3 0:00:2				[01
1 ² 2 1 ² 2	Reset countdown timer Export to file Export selected to file	0:00:2 0:00:2		Lion prid	e	[01
1 2 2	Show errors\warnings info Ctrl+E	0:00:3 _0:02:04:21	00:00:00:00	00:02:04:21	Macro Match Light 4K	

Figure 254. Countdown timer

Select the Reset countdown timer in the context menu to reset the timer.

Creating a custom layout

The AirX broadcast automation allows you to create individual custom Channel Manager window layouts, save them as *.xml files, transfer them between workstations and restore layouts from a backup.

By default, when you launch the Channel Manager application, the interface windows are arranged as follows:



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Figure 255. Channel manager default interface

Channel Manager default Interface includes:

- 1. Channel Manager main window Playout channel management, control menu
- 2. Channel Source window All connected sources of any type
- 3. Source content browser window File manager that contains all contents of folders connected to the channel
- 4. Channel Preview window Visual preview of the processing schedule
- 5. Channel OnAir window Playlist / Schedule window for scheduling
- Item's Scenes window. Channel CG CG overlay scheduling. Refers to the window 5
- Item's Output Events window Output Control events scheduling. Refers to window 5
- 8. Channel Audio ctrl window Channel sound settings

All windows can be moved. The figure below shows an example of a layout with a custom window order:



Figure 256. Channel manager custom interface



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To make a custom layout, you may create a preset of interface windows location (Layout preset).

1. Expand the **View** item of the Channel Manager application system menu. Select the **Layout manager** item in the dropdown list.

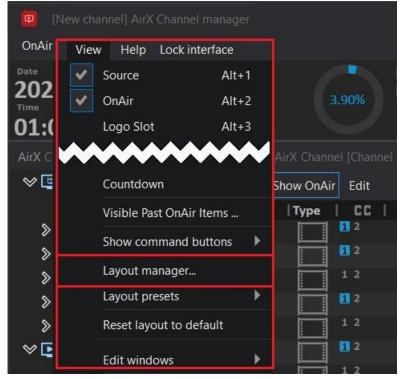


Figure 257. Layout manager item

2. In the additional Layout Manager window you can create and save up to 50 unique custom layouts (presets).

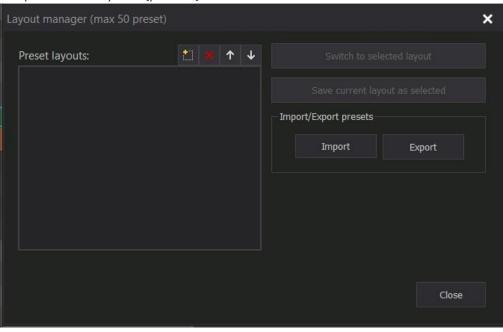


Figure 258. Layout Manager window

The Layout Manager window contains the following blocks:



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Preset layouts – a list of preset layouts Control buttons of the Preset layouts field:

- New create a new layout
- **Delete** delete the selected layout
- **Move Up** move the selected layout higher in the list
- Move Down move the selected layout lower in the list

Switch to selected layout button - switch to the selected layout. The button is active only if there are layouts in the list.

Save current layout as selected button - save the current layout of the Channel Manager application windows as the selected layout (from the list). The button is active only if there are layouts in the list.

Import/Export presets field:

- Import import layouts saved as *.xml file into the Channel Manager interface
- **Export** export existing layouts to *.xml file
- The **Close** button closes the Layout manager window.
- Click New in the Preset layouts field to create a preset. Enter the name of the layout, which will be saved as the current location of the Channel Manager windows. Click Save current layout as selected. Confirm saving the layout in the pop-up window.

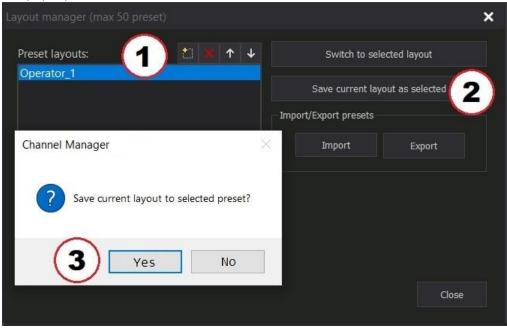


Figure 259. Save current layout to selected preset

 Click Export to export layouts to *.xml file. In the Export layout window select the layouts you want to export (for multiple selection, hold down Ctrl on the keyboard) and click Export Selected. To export all available layouts, click Export all.



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Preset layouts:	* * *		
Operator_1 Operator_2 Operator_3		Save current layout as select Import/Export presets Import Export	
Export layout Operator_1			×
Operator_2 Operator_3		Export selected	
			Cancel

Figure 260. Export layouts

- 5. **Save** *.xml file using a standard Windows file manager.
- 6. Use the **Import** button to import a previously saved layout (or layouts) into the Channel Manager interface.
- If you want to switch to a custom layout, select the layout in the Preset layouts list and click Switch to selected layout.
 ATTENTION: When you click this button, the layout will be changed to the selected one, the current window layout will be reset! It is not possible to undo the Switch to selected layout action. Be careful not to reset an unsaved layout.

Once the Channel Manager window layout has been saved to custom layouts, the Layout manager window can be closed. Navigation through the saved layouts is available directly from the Channel Manager window:



Figure 261. Navigation through the saved layouts

Schedule Fields

The AirX window workspace is a customizable dynamic visualization of schedule playback.

The schedule **rows** contain primary events (video clips), the schedule **columns** contain the data fields belonging to the primary events.

AirX broadcast automation supports two types of schedules:

Playlists: regular playlists of content which are sequenced of video files with secondary events like CG and control commands. The names of xml files of playlists can be any.

Schedules: chronologically organized and time-accurate playlists of content. Each schedule row has a specific Date&time field. The names of xml files of schedules can be any.

In addition, AirX supports the **Autoloaded schedules**, created by a third-party software, which supports the playlist format compatible with AirX. The auto schedule is loaded automatically at an assigned day and time. These schedules differ from the regular AirX schedules by naming structure in order to be played on the desired date and time automatically. The structure is: **YYYY.MM.DD**, where YYYY stands for year, MM-month, DD-date. **EXAMPLE**: If the name of the schedule is "2022.06.14.xml", it will be loaded on June 14th, 2022 exactly. But in other parameters they are the regular Schedule files.



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irX Channel Show OnAir		innel 2) OnAir: Pl Show columns											×
Type		I Â I 🔤 I		1 03	Scale	Duration	In	Out	Name	Source	ExtEvent	Event ID Ag	e Smokir
640									Web url	Web url	Start SCTE-35 Web		
							00:00:00:00			D:\media\HD_MP4\			
	8					00:02:46:11	00:00:00:00	00:02:46:11	Out of town Aerial Drone	D:\media\HD_MP4\			
									Macro Match Light 4K	D:\media\HD_MP4\			
						00:02:03:17	00:00:00:00	00:02:03:17	Pacifica California	D:\media\HD_MP4\			
(R)-						01:00:00:00			Web url	Web url	Start SCTE-35 Web		
			2			00:01:31:00			Block item		Start SCTE-35 Web		
		¢.				00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4	D:\media\OST_HD	Start SCTE-35 Web		
						00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4	D:\media\OST_HD			
			2			00:00:20:01	00:00:00:00	00:00:20:01	The burger drop.mp4	D:\media\OST_HD			
			2			00:00:30:00	00:00:00:00	00:00:30:00	Rammstein - Europe Stadium	D:\media\OST_HD			
									DoYouKnow_2min_v2.mp4	D:\media\MP4\			
						00:26:00:00	00:00:00:00	00:26:00:00	Speakeasy Drink Creation.mp4	D:\media\OKKO\Ob			
ltem's So ayer Offse		ime Offset (end tim	ne D	luration	Nan	10	Į Auto	Item's output events If Offset start time Offset	t end time Name		Program	ID Avail num



Type		Scale	Date	e & time	Duration	In	Out	Name	Source	ExtEvent	Event ID	Age	Smokin
			G										
820 -													
									D:\media\HD_MP4\				
						00:00:00:00		Macro Match Light 4K	D:\media\HD_MP4\				
									D:\media\HD_MP4\				
820 -				2023-03-17 02:20:28:09	01:00:00:00			Web url	Web url	Start SCTE-35 Web			
				2023-03-17 03:20:28:09	00:01:31:00			Block item		Start SCTE-35 Web			
				2023-03-17 03:20:28:09	00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4	D:\media\OST_HD	Start SCTE-35 Web			
				2023-03-17 03:20:48:21	00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4	D:\media\OST_HD				
				2023-03-17 03:21:09:08	00:00:20:01	00:00:00:00	00:00:20:01	The burger drop.mp4	D:\media\OST_HD				
				2023-03-17 03:21:29:09	00:00:30:00	00:00:00:00	00:00:30:00	Rammstein - Europe Stadium	D:\media\OST_HD				
									1 D:\media\MP4\				
810					01:00:00:00			Web url	Web url	Start SCTE-35 Web			
									D:\media\HD_MP4\				
				2023-03-17 04:53:31:03	00:02:46:11	00:00:00:00	00:02:46:11	Out of town Aerial Drone	D:\media\HD MP4\				

Figure 263. AirX Channel Schedule workspace

The title bar of the Channel OnAir window contains the name of the current playout channel in the square brackets. Here you can also see the Playlist/Schedule mode that is selected.

- Click the **Show OnAir** button to jump to the currently playing playlist row.
- Click the **Edit** button to expand the Channel playlist editor drop-down list (see the **Channel OnAir window** chapter for details).
- The Show columns menu contains a list of columns of the OnAir window workspace. The columns can be enabled/disabled by checking and unchecking the corresponding checkboxes. All items in the list below the Event ID are custom and must be configured in AirX Control app (see the Channel TAGs and EPG chapter for details).



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Shc	ow columns
~	Expand\collapse block
~	Item type
~	Subtitles
~	Output event
~	Scene
~	Logo
~	Loop
~	Scale (àspect ratio)
~	Duration
~	In
~	Out
~	Name
~	Source
~	ExtEvent
~	Event ID
~	Age
~	Smoking
~	Description

Figure 264. Show columns menu

See the **Channel OnAir window** chapter for detailed description of the columns.

Channel Manager Control buttons

Channel Manager is the main scheduling application that allows you to create an OnAir schedule manually or work with a schedule downloaded from a third-party source (broadcast traffic management system). Also, the Channel Manager is the main AirX application for the playback control.

The Channel Manager Control buttons are located on top of the app window.



Figure 265. Channel Manager Control buttons

- Control buttons for switching between the schedules of servers A and B, when working in redundancy mode. See the **AirX channel redundancy (1+1)** chapter for details.
- 2. Main function buttons to control the playback of the schedule in manual mode.
- **Play by current server time** click it to start the playback of a schedule according to the current server time.
- **Play from the selected position** click it to interrupt the currently playing clip and jump to the currently selected (highlighted) item in the schedule.



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- **Skip** click it to interrupt the currently playing clip and jump to the next item in the schedule.
- 3. Control buttons to change the channel workflow (Playlist or a Schedule).
- Switch to playlist mode
- Switch to schedule mode

You can enable or disable any of Control buttons using the **View** -> **Show command buttons** drop-down list:

💷 [N	lew channel] AirX Channel m	ianager										
OnAir	View Help Lock interf	face										
Date	Source	Alt+1					-					
202: Time	OnAir	Alt+2			A	1	в		•	▶	Ē	
00:3	Logo Slot	Alt+3	Server A									L J
AirX Ch	~~~~~	\sim	Server B									
⊗ 🗉	Countdown	İ	Play by current server time	1								
61	Visible Past OnAir Ite	ms	Play from selected position		[;]	Scale	Duration	In	Out	Name		Source
> 🗋	Show command butt	tons 🔹	🗹 Skip				01:00:00:00			Web url		Web url
> ⊑	Layout manager		Select OnAir Playlist	12	[]2							
≫ ∉	Layout presets	•	Select OnAir Schedule	\mathbf{X}			00:02:46:11	00:00:00:00	00:02:46:11	Aerial Dror	ne	D:\media\l
» ۲	Reset layout to defau	ult	L ^I ² Å	\mathbf{x}	[]2		00:03:13:11	00:00:00:00	00:03:13:11	Football in	Ultra HD	D:\media\H

Figure 266. Enable/Disable the Control buttons

All the Control buttons are enabled by default.

States of the schedule elements. The color-coding and navigation.

Each Channel Manager Schedule row contains the primary event (video clip) supplemented with data fields belonging to that event (such as CG, tags or output events), as well as info icons (presence of subtitles, input events, loop playback parameters in the Playlist, Fixed time in the Schedule).

The AirX Channel Manager supports the color-coding of the schedule rows, including the states of the schedule elements, various types of primary events and Error/Warning messages.

1. N. C. 1.		121.0	45 01							
AirX Channel [
Show OnAir	Edit	Show col	umns							
Type	CC	IQI			[;]	Scale	Duration	In	Out	Name
	1						00:02:04:21	00:00:00:00	00:02:04:21	Macro Match Light 4K
	U	() () () () () () () () () ()		1			00:02:03:17	00:00:00:00	00:02:03:17	Pacifica California
	12						00:00:19:24	00:00:00:00	00:00:19:24	BARS and TONE.mxf
(A)-	2						01:00:00:00			Web url
	1	(3)					00:03:13:11	00:00:00:00	00:03:13:11	Football in Ultra HD
	1 2	\sim					00:00:20:12	00:00:00:00	00:00:20:12	Speakeasy Drink Creation.mp
	4								00:03:41:08	ALIVE Canada 4K_1.mp4
	1	0					00:00:30:01	00:00:00:00	00:00:30:01	DoYouKnow_2min_v2.mp4
	1 2	(5)					00:00:20:12	00:00:00:00	00:00:20:12	1-MacCoffee.mpg
		~				-	00:00:20:01	00:00:00:00	00:00:20:01	Out of town Aerial Drone

The color-coding provides additional information:

Figure 267. Color-coding of the schedule rows

- 1. Grey standard Schedule Item, video clip, primary event.
- 2. Green the currently playing clip. OnAir playback position.
- 3. Orange the element that will be played after the current. Ready for playback position (next in the schedule).
- 4. Red schedule row with Error status. Missing or corrupted primary event, missing secondary event, inactive Live input, etc.



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5. Yellow – schedule row with Warning status. Video file format mismatch with playout channel format (incorrect resolution, fps, etc.)

If there are schedule rows containing errors, warning icons will be indicated in the main window of the Channel Manager:



Figure 268. Warning and Error icons

Warning (yellow triangle) indicates that there are files in the schedule, whose parameters do not match the Playout channel settings (aspect ratio, fps, etc.). The files will be played according to the schedule and the broadcast will not be stopped. According to the "non-critical" status, such files are not highlighted in the schedule window by default. The highlighting of Warnings elements can be enabled from the Edit menu (see the **Channel OnAir window, Schedule mode** chapter for details).

Error (red cross) indicates that schedule contains files with critical errors. For example, the video files that there are in the schedule are missing from the broadcast playout server storage or corrupted. Such error rows (missing or corrupted video files, CG files, incorrectly filled service slots) will be highlighted in red in the schedule. In addition, their location will also be duplicated by a red mark in the scroll bar of the schedule window on the right.

If the schedule playback reaches the row marked in red, the behavior of AirX automation will depend on the reason that caused the Error status. For example: if an error is caused by a missing CG file on the server storage, the primary event (the video file) will be played without overlays. The broadcast will not be stopped. However, if the error is caused by a missing or critically corruption of a primary event (a video file in the schedule), you will see a black field on the air (or media file/live input, specified as a replacement instead of a black field). See the **Media folders and content replacement**, and the **Input redundancy** chapters for details.

If you click on the Error icon, you will jump to the nearest schedule row containing an error. Clicking the icon again will move the pointer to the next error, and so on. This is how you can navigate through elements with an error status.

If you want to see the detailed description of the error or warning, select the schedule row containing an error with the mouse. Then right-click it to expand the context menu (Figure 208. Channel playlist editor drop-down list) and select the lower **Show errors/warnings info** item to open an additional window listing errors of the schedule item.

Underrun/Overrun conditions

In addition to the above service options, the OnAir schedule (due to its chronological structure) has a color-coding of Underrun and Overrun conditions (only available in the Schedule mode).



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AirX Channel Schedule Editor [Channe	1]									
Test_schedule.xml										
AirX Channel manager [Channel 1] Schedule: Test_schedulexml										
Edit Show columns 🖪 📰 🕨 18 January 2023, Wednesday										
Type CC Ậ I∭)	Scale Da	ate & time	In	Out	Duration	Name				
1 2		2023-01-18 00:00:00:00	00:00:00:00	00:03:41:08	00:03:41:08	ALIVE Canada 4K_1.mp4				
1 2		2023-01-18 00:03:41:08	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro				
((*)) 1 2	🗵 🔲 🤆	2023-01-18 00:06:27:19			01:00:00:00	NewTek NDI				
1 2		2023-01-18 01:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4				
» 🖸		2023-01-18 01:09:41:05			01:02:04:21	Block item				
1 2		2023-01-18 02:11:46:01	00:00:00:00	00:02:03:17	00:02:03:17	Pacifica California Beautiful Drone Video in 4k				
1 2	🗵 🔳 🤆	2023-01-18 03:00:00:00	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro				
1 2		2023-01-18 03:02:46:11	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4				

Figure 269. Underrun

AirX Channel Schedule Editor [Channel 1]									
Test_schedule.xml									
AirX Channel manager [Channel 1] Schedule: Test_schedule.xml									
Edit Show columns 🖪 📼 🕨 18 J	anuary 2023	3, Wednesday							
	Scale Date	e & time	In	Out	Duration	Name			
1 ^{1 2}		2023-01-18 00:00:00:00	00:00:00:00	00:03:41:08	00:03:41:08	ALIVE Canada 4K_1.mp4			
12		2023-01-18 00:03:41:08	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro			
(t)) 1 2	। 🖪 🚱	2023-01-18 00:06:27:19			01:00:00:00	NewTek NDI			
1 ²		2023-01-18 01:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4			
	7 🔲 🔍	2023-01-18 01:09:41:05			01:00:00:00	NewTek NDI			
		2023-01-18 02:09:41:05	00:00:00:00	00:02:04:21	00:02:04:21	Macro Match Light [4K Slow Motion]_1.mp4			
		OVERRUN +00:11:46:01							
12	ା 🔳 ଜ୍	2023-01-18 02:00:00:00	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro			
12		2023-01-18 02:02:46:11	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4			

Figure 270. Overrun

See the **Live streams and additional playlists. Prescheduling workflow.** chapter for the detailed description of Underrun and Overrun conditions.

ATTENTION: The Underrun and Overrun conditions in the schedule are considered as an error and cause the Error icon.

The different types of primary events

There are several types of primary events, supported by the AirX broadcast automation:

AirX Channel [I	New cha	annel 2] OnAir: Pla	aylist						
Show OnAir	Edit	Show columns							
Type	CC	I 🇘 I 🞬I		[;]	Scale	Duration	In	Out	Name
	4					00:00:20:12	00:00:00:00	00:00:20:12	Soccer in Ultra HD
	U					00:00:30:01	00:00:00:00	00:00:30:01	Out of town Aerial Drone
(Å) -		(2)				01:00:00:00			Web url
	1 2	\sim				00:03:13:11	00:00:00:00	00:03:13:11	Pacifica California
	2					00:02:46:11	00:00:00:00	00:02:46:11	Macro Match Light 4K
∞ 🖂	3					00:00:40:24			Block item
	1					00:00:20:12	00:00:00:00	00:00:20:12	Pepsi.mp4
						00:00:20:12	00:00:00:00	00:00:20:12	The Art of Baking.mp4
	1 2					00:00:20:12	00:00:00:00	00:00:20:12	DoYouKnow_2min_v2.mp4
	5		×	C\$3		00:00:20:01			Empty Block
	1					00:00:20:01	00:00:00:00	00:00:20:01	Macro Match Light 4K
						00:00:30:00	00:00:00:00	00:00:30:00	Speakeasy Drink Creation.mp4

Figure 271. Different types of primary events

- 1. Grey standard Schedule Item, video clip, primary event.
- 2. Light blue Live source or Web URL.



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- 3. Dark blue a block header
- 4. Light blue with the dark gray background several elements of the schedule combined into one group a block.
- 5. Brown Empty Block (Dummy clip).

Scheduling of Simple TV channels

The scheduling of Simple TV channels performs basic operations with content files - videos and CG files - without including Live inputs, studio signals, live broadcasts or prompt (on-the-fly) schedule editing.

How to: Prepare the schedule

Unlike the workflows described in the chapters below, the scheduling of Simple TV channels can be implemented either with the Playlist (a simple cyclic playlist of files) or with the Schedule (chronologically organized and time-accurate playlists of content). The sequence of actions in both cases will be the same.

How to: Make the simple schedule of files

By the time you are ready to prepare your first schedule, you should already have a Playout channel configured on the broadcast playout server and client components installed at the operator's workstation.

1. Launch the **Channel Manager** application from the AirX Launcher window. Select a Playout channel to work with.

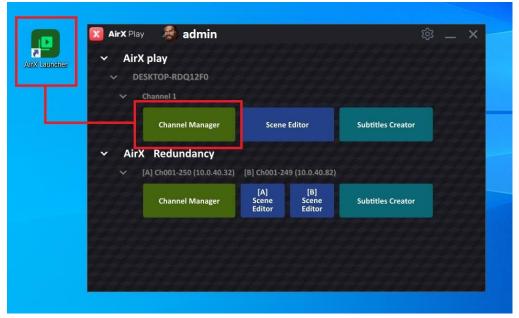


Figure 272. Launch the Channel Manager app

The first time you launch the Channel Manager application, it will look the follows:



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Figure 273. Channel Manager initial interface

Please notice that we are using the Schedule mode as an example!

 On the left side of the application window you can see the AirX Channel Source [Channel name] pane. This is the Channel resource tree; you can find the detailed description of its branches in this guide.

回 [N	lew channe	el 2] Air	X Channel mar	nager					
OnAir	View	Help	Lock interface						
	-02-0 7:25:()9 (Counter 01:36:4 Count Down +24:00:	3:0 00:	05 00	0.00%		Alarm!	
AirX Chan				×	AirX Chann				
	Channel I Channel I Schedu	orogra Ile		Ţ	Show OnAi	Edit	Show (columns	•
] Playlist] Schedu ⁄Iedia fol ce content	ıle Aut Iders		Ą					
Type	Name								
-	<u>F</u> ind Open for	Ctrl+	F						
	Create ne	ew			Item's S	cenes	000000000		
	Remove				Layer	et start	time	Offset	end tir

Figure 274. Schedule folder



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In the figure above, you can see a part of the Channel Manager interface and the **Schedule** folder located in the channel resource tree.

Select the Schedule folder with the mouse. If you already have some earlier created schedules, they will be displayed in the **Source content browser** window (right under the channel resource tree). But for the first launch the folder will be empty.

Right-click on an empty space of the Source content browser window to call the context menu. In this menu please select the **Create new...** item.

Next enter the name of the schedule in the Schedule Name window and click Ok.

Schedule Name			×
Test_schedule			
	ОК	Cancel	

Figure 275. Schedule Name window

After you click Ok, you will see the created schedule in the Source content browser window.

ATTENTION: In fact, Schedules and Playlists are *.xml files stored in the broadcast playout server storage in folders associated to the channel. Folders are created automatically in the moment of a playout channel creation; changing the folder path is not possible. Manual modification of these files is prohibited due to the risk of schedule corruption by human error.

After you add a first schedule, you can work with the drop-down list of the Source content browser context menu. It will become available for every schedule in the folder.

So	urce content bro	wser	ņ				
Туре	Name						
	Test_schedu	ıle.xml					
	<u>F</u> ind	Ctrl+F					
	Oper	n for edit					
	Creat	Create new					
	Remo	ove					
	Rena	me					
	Cut	Ctrl+X					
	Сору	Ctrl+C					

Figure 276. Source content browser context menu

This context menu will help you to **find** a schedule through the list of schedules, **open** the schedule in an additional window **for editing**, **delete** the schedule, **remove** or **rename** it. And also this menu has standard **Cut**, **Copy** and **Paste** options.



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3. Open the schedule in an additional Schedule Editor window using the Open for edit item of the context menu, or by double-clicking on the schedule name. The Schedule Editor window differs from the current air schedule by its title bar: it contains the name of the current channel and the name of the schedule file you are currently working with.

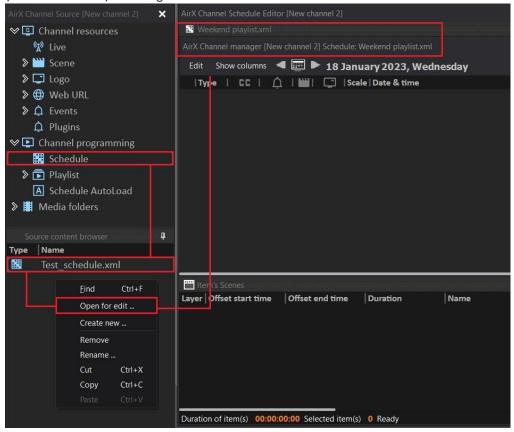


Figure 277. The additional Schedule Editor window

You can open several schedules and playlists at the same time and work with them in one window with the simple navigation. You can move and group windows as you wish:

AirX Channel Schedule Edito	r [New cha	nnel 2]										
4_Banner.xml												
Test_schedule.xml	Ē 4J	Banner.xı	nl ×	Weekend_mor	ning.xml	Friday_Primetime.	ml 3_Subtitles.xml					
AirX Channel manager [New	Aix Channel manager [New channel 2] Schedule: Weekend playlist.xml Schedule Playlist											
Edit Show columns						nead	e naynst					
Type CC 🛕	. I 📖 I		[,] S	cale Duration	In	Out	Name					
1 2				00:00:30:06	00:00:00:00	00:00:30:06	Commercial - Make It Your Moment.mp4					
1 2				00:00:20:00	00:00:00:00	00:00:20:00	Dunkin Iced Coffee.mp4					
1 2				00:00:30:00	00:00:00:00	00:00:30:00	Kroger - Simple Truth.mp4					

Figure 278. Navigating the Schedule and Playlist tabs in the Schedule Editor window



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4. In the left side of the Channel Manager app window, expand the Media Folders branch of the Channel resource tree and select the desired folder with video files (see the **Media folders and content replacement** chapter for details). You will see the list of available video files in the **Source content browser** window right below the channel resource tree. This list will contain only the video files that can be played in AirX (see the **Table of codecs** chapter for details).

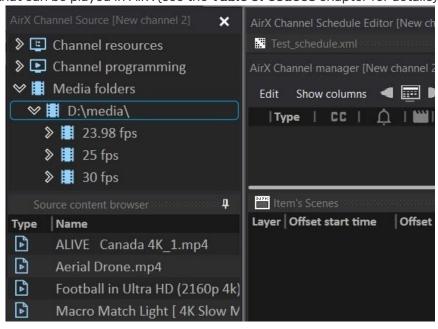


Figure 279. AirX Media folders

AirX broadcast automation supports subfolders within the channel Media folders, so you can create the most convenient file structure.

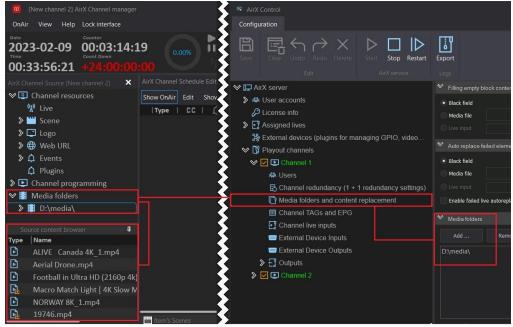


Figure 280. Media folders location - Channel Manager and AirX Control apps

The figure shows the connection of the Media folders in the Channel Manager interface (on the left) and in the AirX Control interface (on the right). See the



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Configuring a Playout channel and **Media folders and content replacement** chapters for details.

5. Open a Media folder in the Source content browser window and then create a Schedule manually, by dragging and dropping files onto the AirX Play grid.

OnAir View Help Lock interface									
Date Counter 2023-02-09 00:40:49: Time Count Down 16:19:50:13 +24:00:00	00 0.00% Alarr		►	•					
AirX Channel Source (New channel 2) 🛛 🗙	AirX Channel Schedule Editor [New	w channel 2]				×			
🔉 🌐 Web URL	🔀 Weekend playlistaml					*			
D Events	AirX Channel manager [New channel 2] Schedule: Weekend playlist.xml								
D Plugins	Edit Show columns ◀ 📖	🛛 🕨 8 February 2023, Wednesday							
Channel programming	Type CC 🏠 I	Cale Date & time	Duration In	Out	Name	Source			
V 🖪 Media tolders					ALIVE Canada 4K_1.mp4				
♥ D:\media\	1 2				Football in Ultra HD (2160p				
23.98 fps	12								
25 fps		Image:	00:02:46:11 00:00:00:00	00:02:46:11	Aerial Drone				
30 fps	1 2	💷 📃 🔍 2023-02-08 00:11:25:07	00:02:04:21 00:00:00:00		Macro Match Light [4K Slo				
Source content browser Vane	12								
ALIVE Canada 4K 1.mp4									
Aerial Drone.mp4									
Football in Ultra HD (2160p 4k	Drag'n'Drop		A Item's output events						
Macro Match Light [4K Slow M		set end time Duration Name		Offset end time	Name	Program			
NORWAY 8K_1.mp4	المستعر								
Beautiful Sea.mp4	4								
Pacifica California Beautiful Dr			3						

Figure 281. Creating the Schedule

You can add several files from a folder to the schedule at once using the standard multiple selection tool. Hold down **Ctrl** on your keyboard and select several video files with the mouse. Then, with a simple drag'n'drop, move them to the schedule.

Video files can be added to any place in the schedule as well as to the end of the schedule.

You can add a **Set fixed time** flag to any primary event (video file) in the schedule. See the **Live streams and frequently changing schedules. Live video workflow.** chapter for details.

Once you create the schedule, you need to move it to the Channel OnAir window. After this action the playback will start automatically. See the **Schedule playback** chapter for details.

ATTENTION: Scheduling and editing is also possible directly from the Channel OnAir window. But the method, described above, reduces the risk of schedule corruption by human error.

How to: Edit a file duration (trim)

The AirX Play has several tools for trimming the primary event (video file) or splitting it into parts:

 You can edit the values of the In, Out and Duration schedule fields manually. Double-click the value in the Duration field (it will turn orange) and edit it. The Out value will be changed automatically, the In value will remain. The playback will start from the beginning of the video file and will play exactly up to the specified duration.

This is the best way for Intro, for splash screens or to fill in the empty blocks (dummy clips).



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AirX Channel manager [New channel 2] Schedule: Te	st_schedule.xml			
3 February 2023, Wednesday				
📑 🛛 Scale Date & time	Duration	In	Out	Name
🗵 🔲 🕓 2023-02-08 00:02:00:00	00:03:41:08	00:00:00:00	00:03:41:08	ALIVE Canada 4K_1.mp4
🗵 📃 🕓 2023-02-08 00:05:41:08	00:02:00:00	00:00:00:00	00:02:00:00	ALIVE Canada 4K_1.mp4
d time Duration Name		utput events	Offset end time	Name

Figure 282. Edit the Duration field

You can change the duration using the ${\rm In}$ and ${\rm Out}$ schedule fields in the same way.

If you want to manually split a video file, add the file to the schedule multiple times and edit the **In** and **Out** fields for each file insertion.

AirX Channel manager [New channel 2] Schedule: Test_schedule.xml										
Show OnAir Edit Show columns	ৰ 🧰 🕨 23 March 2023, Thursday									
Type CC 🋕 🔛	📑 Scale Date & time	Duration	In	Out	Name					
1 2	🗵 📃 🕓 2023-03-24 06:21:20:14	4 00:15:00:00	00:00:00:00	00:15:00:00	2178.mp4					
> <u></u>	2023-03-24 06:36:20:1	4 00:04:51:07			Block item					
1 2	🗵 📃 🕓 2023-03-24 06:41:11:2	1 00:15:00:00	00:15:00:00	00:30:00:00	2178.mp4					
» 🖳	🗵 🕒 2023-03-24 06:56:11:2	1 00:05:18:07			Block item					
1 2	📧 📃 🕓 2023-03-24 07:01:30:0	3 00:15:00:00	00:30:00:00	00:45:00:00	2178.mp4					
» <u></u>	2023-03-24 07:16:30:02	3 00:03:02:22			Block item					
1 2	📧 🖪 🕓 2023-03-24 07:19:33:0	0 00:12:42:10	00:45:00:00	00:57:42:10	2178.mp4					

Figure 283. Split a video file

2. You can edit the file duration using a built-in Channel player.

On the left side of the schedule window you can see the **Type** column. Select the video file (schedule row) with the mouse. Double-click the "frame" icon in the Type column. The Channel player will be opened in an additional window. Use the timeline slider and control buttons to edit the In point and the Out point

timecodes of the video. Save the changes with the **Apply changes to item** button (green button with a check mark).



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Figure 284. Channel player. In, Out, Duration fields.

The same way you can split the file into parts using the built-in Channel player. Add the file to the schedule multiple times, open the player and edit the duration parameters for each file insertion.



Figure 285. Channel player. Split a video file.



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How to: Rename a video file

You can rename the primary event in the schedule by changing the **Name** field. Double-click on the title of the video file and switch to edit mode (the title will turn orange). After changing the name, press Enter.

Please note that this action will not rename the video file located in the folder on the broadcast playout server. Only the name of the element in the *.xml file of the schedule will be changed and, accordingly, the Name field in the Channel Manager application. If you have the several inclusions of the file in the schedule, only one schedule row will be renamed.

	lest_sche	edule.	xml					×
Ed	it Sho	ow col	umns 🛛 🛋 📄 🕨 18 Januar	y 2023, Wedn e	esday			
	Scale	Dat	e & time	Duration	In	Out	Name	Source
			2023-01-18 00:00:00:00	00:03:41:08	00:00:00:00	00:03:41:08	ALIVE Canada 4K_1.mp4	D:\media\
			2023-01-18 00:03:41:08	00:02:46:11	00:00:00:00	00:02:46:11	DoYouKnow_2min_v2.mp4	D:\media\
			2023-01-18 00:06:27:19	00:03:13:11	00:00:00:00	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4	D:\media\
			2023-01-18 00:09:41:05	00:02:04:21	00:00:00:00	00:02:04:21	Macro Match Light [4K Slow Motion]_1.m	np4 D:\media\
			2023-01-18 00:11:46:01	00:02:03:17	00:00:00:00	00:02:03:17	Pacifica California Beautiful Drone Video ir	4k D:\media\

Figure 286. Rename a video file

How to: Add and edit a Block

In the AirX Play Channel Manager application you can work not only with separate video files in the schedule, but you can also combine them into blocks and work with a group of files as a single element of the schedule.

For example, you can assign a common logo, move the block in the schedule or trigger the block playback using the external events.

If you want to combine several files into a block, select these files with the mouse while holding down the Shift button on the keyboard. And then right-click to call the context menu and select the **Join Items Into Block** item.

AirX Channel Schedul	le Editor [New channel 2]		Select all	Ctrl+A
Show OnAir Edit	Show columns 🛛 🗮 🕨	18 January 2023, Wednesday	Scale mode	
Type CC	Duration	Name	External event	. Þ.
	. 00:00:20:01	1-MacCoffee.mpg	Logo slot	÷.
1 2	00:00:20:01	garnier.mpg		
	00:00:20:12	Pepsi.mp4	Expand all blocks	
	00:00:20:12	The Art of Baking.mp4	Expand selected blocks	
1 2	00:00:20:12	mb.mpg	Collapse all blocks	
12	00:00:20:01	DoYouKnow_2min_v2.mp4	Collapse selected blocks	
1 2	00:00:20:12	Speakeasy Drink Creation.mp4	Join items into Block	
1 2	00:00:20:12	SUBTLT_1.mxf	Split Block to s sparate itel	ms
	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~
	00:00:20:01	1-MacCoffee.mpg	00:00:00	00:00:20:01
1 2	00 00 20 01			00.00.20.01
< 1	00:01:21:12	Intro block		
1 2	00:00:20:12	Pepsi.mp4	00:00:00	00:00:20:12
1 2	00:00:20:12	The Art of Baking.mp4	00:00:00:00	00:00:20:12
1 2	00:00:20:12	mb.mpg	00:00:00:00	00:00:20:12
1 2	00:00:20:01	DoYouKnow_2min_v2.mp4	00:00:00	00:00:20:01
	00:00:20:12	Speakeasy Drink Creation.mp4	00:00:00	00:00:20:12
1 2	00:00:20:12	SUBTLT_1.mxf	00:00:00	00:00:20:12

Figure 287. Join Items Into Block



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As you can see in the figure above, the following group commands are available for blocks:

- Expand all blocks expand all blocks in the schedule to display the clips included in the blocks
- Expand selected blocks expand only selected blocks
- Collapse all blocks collapse all blocks in the schedule
- Collapse selected blocks collapse only selected blocks
- Join clips into block assemble selected clips into one block
- Split block to separate clips self-explanatory

After making a block, you can rename it (**Block item** by default). The Duration field will display the total duration of the block (outlined with a green frame). You can add (or delete) as many files inside the block as you wish. And also you can assign CG and logo to all files included in the block at once or just to the selected ones.

# How to: Control the CG from the schedule

The AirX broadcast automation has the built-in CG **Scene Editor** for creation of onair graphic design scenes and/or graphics conversion to the internal graphic scene format for AirX software.

It allows you to work with CG of various levels of complexity from a simple overlay of a static logo to a multilayer dynamic design using PIP, FILL + KEY, RSS, etc.

You can assign up to eight multi-layer dynamic CG scenes to each schedule row at the same time. Inside the scene, the number of overlays and CG elements is unlimited.

All the CG scenes available for the current Playout channel are stored in the broadcast playout server storage in folders associated to the channel format (for example: D:\Ch1\Scenes\1920x1080) as ***.vpScene** files. All the CG files you want to use must be converted to ***.vpScene** file format.

There are two types of CG elements, supported by AirX Play: Logos and Scenes:

- The Scene always has its own duration, not depending on the duration of the primary event in the schedule. A Scene may have duration longer than the primary event in this case the playback of the Scene will not be interrupted when the primary event (video clip or Live) is finished. The only exception is when the corresponding Auto stop checkbox is checked (see the Item's Scenes window. Channel CG chapter for details). Each Scene will be played once, and the Scene cannot be looped. Scenes can be placed on multiple overlay layers and cover one another.
- The Logo is always depends on the duration of the primary event. It will be played exactly as long as the primary event (video clip, Live or Block) is playing. If the duration of the Logo is less than the primary event, the Logo will be looped. The logo is always on the top layer and cannot be covered by another CG element.

#### Logo overlay

 Launch the AirX Config server application. Make sure your license includes CG – expand the Server resource tree and go to the License info branch. In the CG Channels line, the value must be 1 or more.



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2. Launch the **Channel Manager** client application. Expand the **View** drop-down list of the system menu in the application window. Check the **Logo Slot** checkbox or press the Alt + 3.

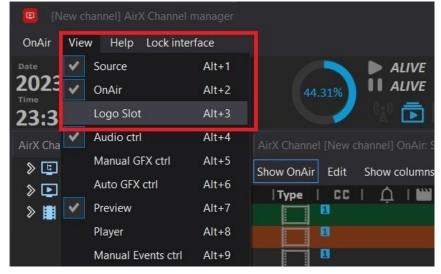


Figure 288. Turn on the Logo Slot window

3. The additional **Channel Logo Slot** window is intended to control and manage the display modes of the channel logo.

The system menu of the window contains the following buttons:

- Turn logo OFF self-explanatory
- Logo by schedule turn on the logo according to the channel schedule. Default mode
- Start selected logo start logotype from the selected slot
- Clear selected logo slot clear the selected logo slot

When you turn on the logo in the selected slot, the logo line will be highlighted in green.

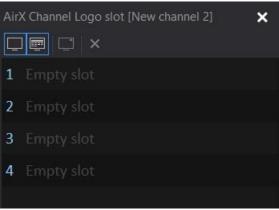


Figure 289. Channel Logo Slot window

4. Now you must add a Logo in one of the slots of the Channel Logo slot window. Expand the Channel resource tree in the left side of the Channel Manager application window and select the **Logo** branch. The Source content browser window will display all logos available for the channel. Select the desired Logo and drag it to the Channel Logo slot window.

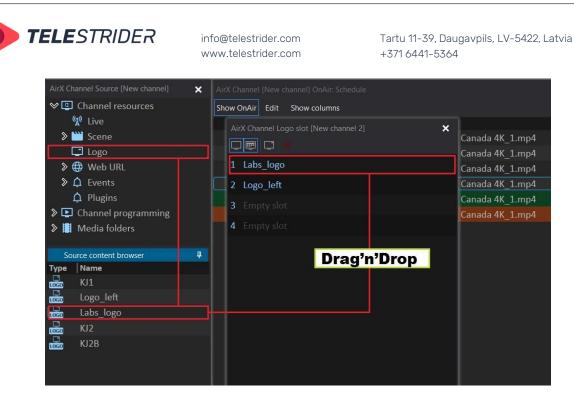


Figure 290. Fill in the Logo slots

- 5. After you add Logos to the Channel Logo slots, close the Channel Logo slot window.
- 6. Next you have to attach the logo to the schedule row (primary event). The type of the primary event does not matter; it can be a video file, Live or Block. Select the desired primary event with the mouse and click the Logo field to expand a drop-down list of available logo slots. Select the logo slot you want to use. The 'screen' icon in the Logo column will then change to the logo slot number. If you want to turn off the logo, select Turn logo OFF from the drop-down list.

[New channel] AirX Channel manager     OnAir View Help Lock interface						
Date         Counter           2023-01-28         00:00:46:1           Time         Count Down           00:13:15:06         00:00:13:1	.8 (77.43%) II Aerial Dr	anada 4K_1 one 5K.mp4				
AirX Channel Source [New channel]						
♥ E Channel resources (𝔄) Live	Show OnAir Edit Show columns	🖵 I 🗘	Scale   Name			Duration
Scene Logo		1 (3	Turn logo OFF	Canada 4 Drone	IK_1.mp4	00:01:00:00 00:02:46:11
> ⊕ Web URL > ↓ Events			Logo Slot 1 Logo Slot 2	atch Li _f	HD (2160p 4k ght [ 4K Slow N	00:02:04:21
<ul> <li>Plugins</li> <li>Channel programming</li> <li>Media folders</li> </ul>			Logo Slot 3 Logo Slot 4	8K_1.n Californi	np4 ia Beautiful Dr	00:03:33:04 00:02:03:17
Source content browser 4						
Type Name						



If the Logo file that is located in the Channel Logo slot window is deleted from the server or damaged, all schedule rows containing this logo will be highlighted in red (see the **States of the schedule elements. The color-coding and navigation.** chapter for details).



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#### **Scene overlay**

- Launch the AirX Config server application. Make sure your license includes CG expand the Server resource tree and go to the License info branch. In the CG Channels line, the value must be 1 or more.
- 2. Launch the **Channel Manager** client application. Select the schedule row (primary event) you want to work with.
- 3. Expand the Channel resource tree in the left side of the Channel Manager application window and select the **Scene** branch. The Source content browser window will display all Scenes available for the channel. Select the desired Scene and drag it to the **Item's Scenes** window. If necessary, edit the Offset start time of the Scene and other parameters (see the **Item's Scenes window. Channel CG** chapter for details).

[New channel] AirX Channel manager	5				
OnAir View Help Lock interface					
Date         Counter           2023-02-08         00:02:08:2           Time         Count Down           01:42:59:12         00:00:09:1	93.15%	ALIVE Canada 4K rain_dv_NTSC.avi	_1.mp4		
AirX Channel Source [New channel]	AirX Channel [New channel				
Channel resources	Show OnAir Edit Show	w columns			
🔐 Live	Type   CC   (	ן באו 🖾 ו 🛱	]  Scale   Duration	In  Ou	ut
Scene	1 2		00:03:58:0	1 00:00:00:00 00	0:03
🔉 🗔 Logo	1 2		00:10:39:1	4 00:00:00:00 00	0:10
📎 🌐 Web URL	1 2		00:30:00:0	1 00:00:00:00 00	0:30
		- · · (1)	00:02:18:1	9 00:00:00:00 00	0:02
🇘 Plugins	1 2		00:03:41:0	8 00:00:00:00 00	0:03
Source content browser	<b>1</b> 2	🔛 🖾 🖾	00:03:33:0	4 00:00:00:00 00	0:03
Type Name	1 2		00:02:18:0	8 00:00:00:00 00	0:02
Tag example Now Next	<b>1</b> 2	🞬 🖾 🛱	00:04:33:2	1 00:00:00:00 00	0:04
Rall_crawl_RSS	Item's Scenes				1
Rall_crawl_File	Layer Offset start time	Offset end time	Duration N	lame	
🖽 Banner avi	1 00:00:00:00	00:02:18:19	00:01:10:00 R	all_crawl_RSS	
Info Drag'n'Drop	2 00:01:30:00	00:00:48:19	00:00:14:00 B	lanner_avi	
Dynamic_space	3 00:01:00:00	00:01:18:19	00:00:15:00 li	nfo	
E Fullscreen_alpha	4 00:00:00:00	00:02:18:19	00:10:00:00 F	ullscreen_alpha	
Name_Age_Smoking	5 00:00:08:00	00:02:10:19	00:00:10:00 A	.ge_	
Rall_crawl_Manual	6 00.00.00.00	00.02.18.19	00.00.10.00 5	moking	

Figure 292. Scene overlay

If the Scene file was deleted from the server or damaged, all schedule rows containing this Scene will be highlighted in red (see the **States of the schedule elements. The color-coding and navigation.** chapter for details).

# Subtitling

The AirX broadcast automation allows using subtitles together with your running clips. The subtitle files must be prepared by the third-party software but you can edit them in the built-in Subtitle Creator application if necessary.

 Launch the AirX Config server application. Make sure your license includes subtitling - expand the Server resource tree and go to the License info branch. In the Subtitles Tracks line, the value must be 1 or more. At the moment AirX allows simultaneous work with 8 subtitle streams. Each subtitle language stream requires an additional license for a channel.



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♥ I AirX server	❤ License settings	
> ♣ User accounts	License	
License info	License ID: 600000000	00002888888
Second lives		
Sector and the sector of the s	♥ License info	
❤ 🕼 Playout channels	License info: Key ID: 600000	000000288888
Channel 1	Technical Support	
Channel 2		Used / Available
	SD Channels	0/1
	HD Channels	1/1
	UHD Channels	0/1
	AV Outputs	1/1
	UDP TS Outputs	0 / 1
	Internet Outputs	1/2
	SMPTE-2110 Streams	0/1
	Hard Subs Channels	0/1
	Subtitles Tracks	0/2
	CO Criatineis	414
	Detection DTMF, SCTE-35/104	I, Plugin Even 0 / 2
	Generate SCTE-35/104 Events	0/1
	Generate Plugin Events	0/2

Figure 293. Subtitles Tracks license

2. Open the Channel Settings pane (click the Channel name with the mouse). You will see the settings in the right side of the app window. Find the **Subtitles** section. Subtitle streams must be activated one-by-one by changing the value from Disabled (subtitles are prohibited) to **Enabled** (subtitles are allowed). The language code for each subtitle track must be entered into the **Lang** box manually. For example, eng or es.

The **Hard Subtitles** checkbox allows embedding ("burning") the subtitle track into the video. The **File** drop-down contains the subtitle file formats, available for the channel. Options: SRT, SRT+STL, SRT+TSB4, SRT+TTML. The **Edit text style** button opens new window for editing the subtitle text styles.

♥ 🖵 AirX server	MXF	files audio ma	p setting						
	Subtitles Hard Subtitles								
License info	Stream	Enabled		Lang:	eng				
Strain Strai	Stream	Enabled		Lang:	es				
₩ External devices (plugins for managing GPIO, video	Stream	Disabled	× 1	Lang:					
🛇 🕼 Playout channels	Stream			Lang:					
Channel 1	Stream			Lang:					
Image: Second	Stream			Lang:				Edit text style	
	Stream			Lang:					
	Stream			Lang:				g! Text style change ter restart channel!	is is
	♥ Channel								
	The root f	older of the ch	annel						
	D:\Ch1_P								

Figure 294. Subtitles settings

- 3. Expand the Channel Recourse tree and then expand the **Outputs** branch and click the desired output to open the settings on the right.
- 4. Now you have to add the subtitles for the SRT output. If you have another type of output, find the description in the **Outputs** chapter.
- Select the Subtitle Format in the drop-down list (None, DVB, EBU-TT) to enable DVB subtitles. The Enable checkboxes will be automatically activated. Check the boxes you want to use. The number of subtitles streams available for activation depends on the basic settings of the playout channel.

Check the box **Enable Closed Captions** if you want to use them. The **Enable** checkboxes will be automatically activated for all the available subtitles streams. Check the boxes you need.

The enabling of **teletext** is similar: check the box **Enable Teletext** and select the streams you need, as described above. After selecting the subtitles streams, you



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have to specify teletext pages in the **Teletext/OP-42(47)** field. The default value is 888, you can change it manually. And finally, select the Main and Secondary codepages languages from the drop-down lists.

♥ I AirX server		
> ♣ User accounts	❤ Subtitles	
🔑 License info	Subtitles	DVB
Assigned lives	Stream 1 (eng)	
Sector and the sector of the sector and the sector of the	✓ Enable	nan codepage. Secondary
🛇 🕼 Playout channels		- Lingion Ocimon
V 🗹 🗈 Channel 1	Disabled	Disabled Main codepage: Secondary
彝 Users		Page: 889 English   English   English
Channel redundancy (1 + 1 redundancy settings)	Disabled	Disabled Main codepage: Secondary
Media folders and content replacement		Page: 890 English 👻 English 👻
Channel TAGs and EPG	Disabled	Disabled Main codepage: Secondary
Channel live inputs		Page: 891 🗧 English 💌 English 💌
External Device Inputs	Disabled	Disabled Main codepage: Secondary
External Device Outputs		Page: 892 English 👻 English 👻
♥ I Outputs	Disabled	
AV New channel AV output		Page: 893 English V English V
🚱 New SRT (DVB) output	Disabled	
Channel 2	Enable	Main codepage: Secondary
	Disabled	Disabled Main codepage: Secondary
		Page: 895 English 👻 English 👻
	≫ _{Muxer}	
	WICKET	

Figure 295. Subtitles settings in the SRT output

- 6. Click **Save** and **Restart** in the main menu of AirX Control app to save the subtitling settings.
- 7. Return to the **License** branch of the Server resource tree and verify the number of licenses. Now it must be 1/1 (or more).
- 8. Open your file storage connected to AirX as a content source in the **Media folders and content replacement** branch of the Channel resource tree. Add subtitle files to the folder with video files.

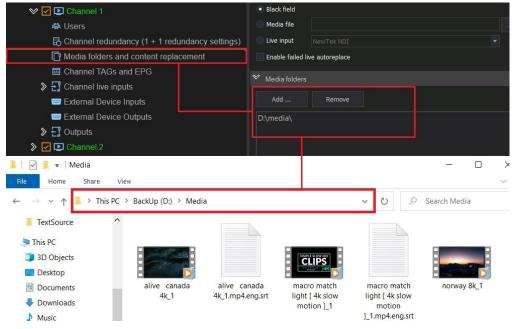


Figure 296. Subtitles files location

**ATTENTION**: The subtitle files require specific naming structure in order to be played with the primary event (video clip) automatically. The structure is: **Video file Name.Video file extension.Language.Subtitle file format** 



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**EXAMPLE**: If the name of the video file is "New York 2023.mp4", the name of the English subtitle file must be "**New York 2023.mp4.eng.srt**" exactly. And the subtitle file must be located in the same folder as the video.

9. Launch the **Channel Manager** client application. Open the schedule in the **Schedule Editor** additional window or create a new schedule.

AirX Channel Source [New channel]	AirX Channel Schedule Editor [New channel 2]	
♥ 🕒 Channel resources	Subtitles.xml	
♥ 💽 Channel programming	Test_schedule.xml	
🛇 📕 Media folders	All Characterization (New Access) 31 Cabed, In: Cabed	
❤ 📕 D:\media\	AirX Channel manager [New channel 2] Schedule: Subtitles.xml	
▶ 11 23.98 fps	Edit Show columns ◀ 🧮 🕨 20 January 2023, F	
▶ 📕 25 fps	Type CC Scale   Date & time	Name
▶ 📕 30 fps		NORWAY 8K_1.mp4
Source content browser <b>4</b>	2023-01-20 00:03:33:04	ALIVE Canada 4K_1.
Type Name	2023-01-20 00:13:14:09	Macro Match Light [
🔂 ALIVE Canada 4K_1.mp4	<b>1 2 2</b> 2023-01-20 00:15:19:05	Pacifica California Be
🕞 Aerial Drone 5K		
Football in Ultra HD (2160p 4k)		
🕞 🛛 Macro Match Light [ 4K Slow M	Drag'n'Drop	
NORWAY 8K_1.mp4		

Figure 297. AirX Play scheduling

In the Schedule Editor window you can see the CC column. Here you can check the number of available subtitle tracks. In the example above there is only one subtitle track.

10. Take the schedule you made in the Schedule Editor window and move it to the OnAir window. Pay attention that some of subtitle tracks in the schedule have turned blue. This means that there is a subtitle file in the content folder that is corresponding to the video file in the schedule.

AirX Channel											
Show OnAir	Edit	Show o	olumns	◀ [		12 Feb	ruary 202	3, Sunday			
Type	CC	ΙĻ	1 📖 1		Scale	Name			Date	e & time	Duration
		¢									00:02:04:21
											00:02:46:11
											00:03:13:11
	8					NORW	/AY 8K_1.mp	94		2023-02-12 02:56:28:22	00:03:33:04
						ALIVE	Canada 4K	_1.mp4		2023-02-12 03:00:02:01	00:03:41:08
	1					Aerial	Drone 5K			2023-02-12 03:03:43:09	00:02:46:11
	1					Footba	all in Ultra H	D (2160p 4k		2023-02-12 03:06:29:20	00:03:13:11
	٨					Macro	Match Ligh	t [ 4K Slow M		2023-02-12 03:09:43:06	00:02:04:21
	1					Pacific	a California	Beautiful Dr		2023-02-12 03:11:48:02	00:02:03:17

Figure 298. Subtitle files in the OnAir schedule

# Schedule automatic import

AirX, as a broadcast automation system, can be integrated into the infrastructure you already have.

The AirX software supports the automatic import functionality to get schedules and media files from external storage systems and to interact with external broadcast traffic management systems.

The schedules created by any third-party software, which supports the playlist format used by AirX, can be imported. The auto schedule is loaded automatically at the assigned day and time. Auto schedules require specific naming structure in order



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to be played on the desired date and time automatically. The structure is: **YYYY.MM.DD**, where YYYY stands for year, MM-month, DD-date. **EXAMPLE**: If the name of the schedule is "2022.06.14.xml", it will be loaded on June 14th, 2022 exactly.

If you want to use the Autoload feature, first you have to enable Schedule automatic import settings in the AirX Config application.

<ul> <li>♥ I AirX server</li> <li>&gt; ♣ User accounts</li> </ul>	▼ Include in the list for deletion scene and animation files
<ul> <li></li></ul>	Schedule automatic import
<ul> <li>Besternal devices (plugins for managing GPIO, video</li> <li>Playout channels</li> <li>Channel 1</li> </ul>	Remove schedule after import     Schedule file     XML       Skip items for     5 <ul> <li>mins</li> <li>Check next</li> <li>3</li> <li></li></ul>
A Users	Auto import schedule folder
Channel redundancy (1 + 1 redundancy settings)	D:\Ch1_PSI\Schedule_Autoload
T Media folders and content replacement	
Channel TAGs and EPG	Content automatic download
> E Channel live inputs	✓ Enable auto download content       Subtitles file format:     SRT

Figure 299. Schedule automatic import settings

You must enable these settings for each Playout channel you want to integrate.

- Schedule automatic import section of the Channel settings is intended for configuring auto loading of schedules and integration with external broadcast traffic management systems. The section fields are active when Enable auto import schedule checkbox is checked.
- 2. The main field is Auto import schedule folder. The field specifies an intermediary folder between AirX and an external traffic system. The broadcast schedule created by third-party software must be saved to this folder. At the same time the AirX service constantly checks the folder for updates. As soon as a new schedule is uploaded to the folder, AirX moves it to the Channel Manager's on-air schedule according to the settings.

Enable auto import schedule	Update mode:	Replace	
Remove schedule after import	Schedule file	XML	-
Skip items for 5 📫 mins	Check next 3	days	
uto import schedule folder		-	
D:\Ch1_PSI\Schedule_Autoload		(2	2).

Figure 300. Schedule automatic import - Enable and Folder

Unlike the **Schedule** and **Playlist** folders, which are automatically created on the server when a channel is created, the **Schedule Autoload** folder must not be created automatically but set by the user. The folder name can be any.

3. After the folder is set, you have to adjust the autoimport settings.

The main setting is the **Schedule file** drop-down, containing the available extensions of the schedule files. Available extensions are XML, XLS, CSV. The default extension is XML.

**Update mode** – the mode of a schedule modifying.



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- The **Replace** mode means that when a new schedule is uploaded into the autoload folder, the AirX service moves it into the Channel Manager, replacing the existing on-air schedule. The old schedule will be deleted.
- Append mode means that the new schedule will not replace the current onair schedule, but it will be added to the Channel Manager after the current one, below the last row. The old schedule will not be deleted: all positions already available in the Channel Manager will remain in their places. By default, Update mode is set to **Replace**. Append mode have to be used with caution as it is intended for highly specialized tasks.

**Check next ... days** – adjustable parameter, intended to set the number of days AirX will search for a schedule in the Auto import schedule folder. The default value is 3. This means that when checking a folder, AirX will check for updated schedules for the current day and two days ahead.

**Remove schedule after import** - a checkbox to automatically remove the schedule from the autoload folder after it is loaded into the Channel Manager.

**Skip items for ... mins** - adjustable parameter. As described above, when a new schedule is uploaded into the autoload folder, the AirX service moves it into the Channel Manager, replacing the existing on-air schedule. The Skip items... parameter shows how many minutes of the current (already-playing) on-air schedule will be guaranteed to broadcast before switching to a new schedule. The default value is 5 minutes. This setting allows quickly editing of the old schedule and smooth transition to the updated schedule.

Finally Click **Save** and **Restart** in the main menu of AirX Control app to save the autoload settings.

After you save the settings, you will see the Autoload folder in the Channel Manager client application:

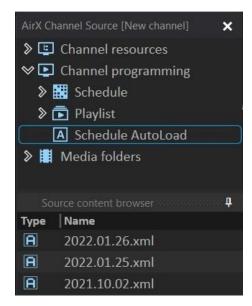


Figure 301. Schedule AutoLoad folder in the Channel Manager app

In addition to integration with external traffic systems, AirX allows you to use the Autoload function in manual mode.

You can manually create schedules in the **Source content browser** window of the Channel Manager application. All user settings described above are the same in the manual mode - **Check next ... days, Skip items for ... mins**, etc.



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If you create the schedules in the Source content browser window, schedule files will have an internal structure that is compatible to AirX by default.

The naming rules are the same both in the auto and manual modes: schedules require specific naming structure in order to be played on the desired date and time automatically. The structure is: **YYYY.MM.DD**, where YYYY stands for year, MM-month, DD-date. **EXAMPLE**: If the name of the schedule is "2022.06.14.xml", it will be loaded on June 14th, 2022 exactly.

In manual mode, you can create schedule files for unlimited days in advance. All created schedules will be automatically uploaded to the on-air schedule upon reaching the specified date without any additional actions.

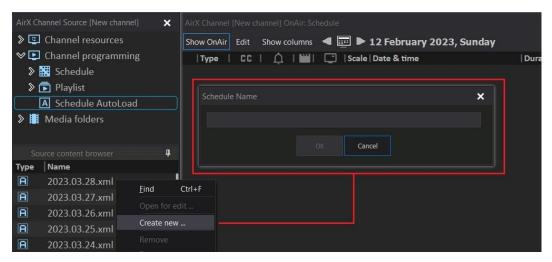


Figure 302. Create new schedule in the Source content browser window

# Schedule playback

Once you have created a schedule, you can add it to the Channel OnAir window of the Channel Manager app to start broadcasting.

Launch the Channel Manager client application and expand the Channel resource tree (**AirX Channel Source** window on the left side of the app window). Select the **Channel programming -> Schedule** branch and click the **Schedule** item. You will see all available schedules in the **Source content browser** window right below.

0 [New channel] AirX Channel manage	r.									
OnAir View Help Lock interface										
Counter 2023-02-10 Time 03:23:30:13		14%	Alarm!		1.mp4		• •	*	ē	
AirX Channel Source [New channel]	K AirX Channel	[New chai	nnel) OnAir: Sch	iedule						
🔉 🛄 Logo	Show OnAir	Edit St	how columns	ء 📼 ک	9 February 2023, Thursday					
👂 🌐 Web URL	Type	CC		Scale	Name	Date	e & time	Duration	In	Out
D Events										
Plugins					Aerial Drone		2023-02-10 03:28:03:23	00:02:46:11	00:00:00:00	00:02:46:11
♥ D Channel programming	( ⁽ A))				NewTek NDI		2023-02-10 03:30:50:09	01:00:00:00		
Schedule					Football in Ultra HD (2160p 4k					
Playlist	(Å)				NewTek NDI		2023-02-10 04:34:03:20	01:00:00:00		
A Schedule AutoLoad					Macro Match Light [ 4K Slow M					
Media folders					Aerial Drone		2023-02-10 05:36:08:16	00:02:46:11	00:00:00:00	00:02:46:11
Source content browser					Football in Ultra HD (2160p 4k					
Type Name										
Friday_Primetime.xml										
Weekend_morning.xml										
Test_schedule.xml		rag'	n'Drop							
			1000							

Select the schedule from the list and drag it to the Channel OnAir window.

Figure 303. Start broadcasting



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The first time you add a Schedule or Playlist to the Channel OnAir window, AirX waits one minute before starting the playback. This is an additional protection that allows you to make sure that everything was added correctly.

In the Figure above the green frame outlines the information fields indicating the broadcast starting process:

- In the **Counter** field you can see a direct countdown of the minute of waiting. It
  is duplicated by a pie chart of the current position completed.
- The **Count Down** field shows the time left before the broadcast starts.
- In the right part of the information field you can see the current running position (Alarm! Designation of the service process – a minute of waiting) and the position after.

After one minute, AirX Play will start broadcasting.

# Live streams and frequently changing schedules. Live video workflow.

This chapter describes the Schedule mode only. The functionality is not available in the Playlist mode, since the playlist is looped and not organized chronologically.

The Live video workflow can be described as the inclusion of external sources in the schedule.

 In a simple case, the timing (duration) of the Live event is known in advance. So the workflow is quite similar to Scheduling of Simple TV channels. A Live event in a schedule is just a static object like a video file. The date and time of the broadcast of each event is fixed.

	×	AirX Channel Schedule Editor [New channel 2]							
🖉 🛄 Channel resources		Test_schedule.xml							
😭 Live									
Scene Scene		Edit Show columns 🖪 🧱	► 18	lanuary 2023, Wednesday					
🔉 🛄 Logo		Type   CC   🋕   🛍	🖵	Scale   Date & time	In	Out	Duration	Name	
🔉 🌐 Web URL		12		2023-01-18 00:00:00:00	00:00:00:00			ALIVE Canada 4	
Events		12			00:00:00:00			Macro Match Lig	
Plugins		12		2023-01-18 00:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra	
🕨 🗈 Channel programming		1 2		2023-01-18 00:09:41:05		00:02:04:21	00:02:04:21	Macro Match Lig	
🕨 🧾 Media folders		(A) 12		2023-01-18 00:11:46:01			01:00:00:00	NewTek NDI	
	ą.	1.2			00:00:00:00	00:02:03:17			
ype Name			-						
NewTek NDI		Drag'n'Drop		Edit time duration		×			
Neb url 2				01:00:00:00	OK Cancel				
🕅 Web url				01.00.00.00	OK Cancel				

Figure 304. A Live event with the fixed duration

- Select the Live branch of the Channel Source resource tree. You will see the list of external sources connected to the Playout channel in the Source content browser window.
- Click on the desired Live in the list and move it to the schedule using drag'n'drop.



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 In the Edit time duration window enter the duration of the Live stream inclusion and click OK.

You will see the Live schedule row, highlighted as a blue line. The **Type** field will have a **Live signal transmission** icon.

Almost all the same actions can be applied either to Live or to video file. You can copy it, delete it, change its duration, add it to a block or assign a Logo and CG.

2. In the case of working with studio signals, live broadcasts, sports broadcasts and other events with flexible timing (duration), AirX have the **Overrun** function, which allows to control the execution of the schedule in real time. You can quickly fix overlays of playback events. See the **Overrun and frequently changing schedules** chapter for details.

# **Fixed time**

Fixed time must be used to set the playback time of the schedule item. In the simplest case, this is the beginning of the on-air day. In the case of more complex channel programming, this may be a scheduled event with a fixed playback time (for example, a news block). Fixed time is necessary to avoid the schedule row displacement when editing other elements in the schedule above it.

 Double-click the **clock icon** in the **Date & time** column to fix the **current time** of the schedule item. The schedule row will be switched to edit mode - the date and time will turn orange. Do not change these parameters, click anywhere in the schedule to exit the edit mode. The clock icon will become active, the schedule row playback time will be fixed and the element will be protected from the accidental displacement.

AirX Channel Schedule Editor [New	channel 2]									
Test_schedule.xml										
AirX Channel manager [New chann	el 2] Schedule: Test_schedu									
Edit Show columns 🖪 🧮 🕨 18 January 2023, Wednesday										
Type   CC   ⚠   🗎	📔 📑   Scale   Date &	time	Duration	Name						
1 2	🖾 📃 🔍 20	23-01-18 00:00:00:00	00:03:41:08	ALIVE Canada 4K_1.mp4						
1 2	I I C 20	23-01-18 00:03:41:08	00:02:46:11	Aerial Drone 4K						
((a)) 1 2	🔄 🔳 🚱 20	23-01-18 00:06:27:19	01:00:00:00	NewTek NDI						
1 2	C C 20	23-01-18 01:06:27:19	00:03:13:11	Football in Ultra HD (2160p 4k)						
» 🖳	🖾 🚱 20	23-01-18 01:09:41:05	01:02:04:21	Block item						
1 2	🗵 📃 🤤 20	23-01-18 02:11:46:01	00:02:03:17	Pacifica California Beautiful Dro						
1 2	🖾 🔲 🚱 20	23-01-18 02:13:49:18	00:02:46:11	Aerial Drone 4K						
1 2	🖾 📃 🔍 20	23-01-18 02:16:36:04	00:03:13:11	Football in Ultra HD (2160p 4k)						



2. If you want to set a **specific playback time** for the schedule row, different from the current one, you also need to double-click the clock icon in the Date & time column. The schedule row will be switched to edit mode - the date and time will turn orange. In this case, you need to change the value of the parameter. Then click anywhere in the schedule to exit the edit mode.



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AirX Channel Schedule Editor [New cha				
AirX Channel manager [New channel 2				
Edit Show columns 🖪 🧮 🕨	• 18 January 20	23, Wednesday		
Type   CC   ⚠́  ∭)	📑   Scale   Date	& time	Duration	Name
1 2	🖾 🗖 🥵	2023-01-18 00:00:00:00	00:03:41:08	ALIVE Canada 4K_1.mp4
1 2		2023-01-18 00:03:41:08	00:02:46:11	Aerial Drone 4K
((r)) 1 2	🗵 📃 🚱	2023-01-18 00:06:27:19	01:00:00:00	NewTek NDI
1 2	🖾 🗖 🤤	2023-01-18 01:06:27:19	00:03:13:11	Football in Ultra HD (2160p 4k)
» 🔁		2023-01-18 01:09:41:05	01:02:04:21	Block item
1 2		2023-01-18 02:11:46:01	00:02:03:17	Pacifica California Beautiful Dro
1 2		2023-01-18 03:00:00:00	00:02:46:11	Aerial Drone 4K
1 2	🖾 🗖 🥵	2023-01-18 02:16:36:04	00:03:13:11	Football in Ultra HD (2160p 4k)

Figure 306. Edit Fixed time

In the figure above, you can see that the playback time of the schedule row (outlined in red) will be changed and shifted by 46 minutes. The playback time of all schedule rows below the Fixed time will be changed automatically.

After you change the Fixed time parameter, you can get two different results: **Underrun** or **Overrun**.

To reset Fixed time, select the schedule row with the mouse, right-click to expand the context menu and click **Reset fixed time** 

🋕 🔛				Split Block to separate items		
			2(	Insert empty block		Aerial Drone
		C,	2(	Reset fixed time		cro Match Light 4K
	1		2(	Open with player		ifica California
			2(	Show MediaInfo		Aerial Drone
			2(	Set a countdown timer		cro Match Light 4K
	1		2(			ifica California
			2(	Export to file		b url
	1	<u>(</u> ]	2(	Export selected to file		
personal constants				Show errors\warnings info	Ctrl+E	

Figure 307. Reset Fixed time

### Underrun

You will see the Underrun when you change the playback time of the schedule row to a later time. This is a system alert indicating that there is an empty block in the AirX schedule, with the duration shown in the orange line. This empty block must be filled with content.

When you add files to the schedule (at the position before the Underrun line), the duration of the empty block will be changed dynamically. When the empty block is completely filled with content, the orange warning line will disappear.



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AirX 0	Channel	Schedule E	ditor [l	New chan	nel 2]	1						
T 🔝												
AirX												
Edi	t Sho	w columns	•	•	18 J	anua	ry 20	23, Wednesday				
	Туре	CC	Ļ	1		Scale	Date	& time	In	Out	Duration	Name
								2023-01-18 00:00:00:00	00:00:00:00	00:03:41:08	00:03:41:08	ALIVE Canada 4K_1.mp4
								2023-01-18 00:03:41:08	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
							G.	2023-01-18 00:06:27:19			01:00:00:00	NewTek NDI
								2023-01-18 01:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4
>								2023-01-18 01:09:41:05			01:02:04:21	Block item
								2023-01-18 02:11:46:01	00:00:00:00	00:02:03:17	00:02:03:17	Pacifica California Beautiful Drone Video in 4
							6	2023-01-18 03:00:00:00	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
								2023-01-18 03:02:46:11	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4

#### Figure 308. Underrun

If Underrun is not fixed and AirX broadcast automation reaches the row containing the Underrun, during the execution of the OnAir schedule, it will use the autoreplacement settings to show:

- Black field if **Black field** is selected. This is the default value for autoreplacement.
- The media file, such as the splash screen, if **Media file** is selected.
- The Live source (Input signal) connected to the Playout channel if the Live input is selected. (See the Media folders and content replacement chapter for details)

# **Overrun and frequently changing schedules**

You will see the Overrun when you change the playback time of the schedule row to an earlier time. This is a system alert indicating that the airtime of different blocks of content is overlapped. In this case, Overrun is a **schedule error**.

AirX Channel Schedule Editor [New chan	nel 2]						
Test_schedule.xml							
AirX Channel manager [New channel 2]							
Edit Show columns 🖪 🧮 🕨	18 Jan	uary 20	)23, Wednesday				
	📑   Sc	ale   Date	e & time	In	Out	Duration	Name
<u>i i i</u>	x [	9	2023-01-18 00:00:00:00	00:00:00:00	00:03:41:08	00:03:41:08	ALIVE Canada 4K_1.mp4
1 2			2023-01-18 00:03:41:08	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
((1)) 1 2		• G	2023-01-18 00:06:27:19			01:00:00:00	NewTek NDI
1 2			2023-01-18 01:06:27:19	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4
W 12	7	P.C	2023-01-18 01:09:41:05			01:00:00:00	NewTek NDI
			2023-01-18 02:09:41:05	00:00:00:00	00:02:04:21	00:02:04:21	Macro Match Light [ 4K Slow Motion ]_1.mp4
			OVERRUN +00:11:46:01				
1 2		• G	2023-01-18 02:00:00:00	00:00:00:00	00:02:46:11	00:02:46:11	Aerial Drone 4K Timelab.pro
			2023-01-18 02:02:46:11	00:00:00:00	00:03:13:11	00:03:13:11	Football in Ultra HD (2160p 4k)_1.mp4

#### Figure 309. Overrun

The red Overrun bar shows the duration of the overrun. In the example above, you can see an overlay for 11 minutes, 46 seconds.

In our example, there are two positions marked with a warning before the Overrun line. A red warning means that the file is completely overlaid and will not be played. A yellow warning means that the file is partially overlaid and its fragment will be played until reaching the time specified in Fixed time field.



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The schedule must be fixed to remove the Overrun.

In Live video workflow (in case of working with studio signals, live broadcasts, sports broadcasts and other events with flexible duration) the Overrun mode is normal but requires user's actions with the schedule.

AirX Channel [New	channel 2] OnAir: Sci	hedule						
Show OnAir Edit	t Show columns	⊲ 📼	▶ 3 Ma	ay 2023, Wednesday				
Type   Cl	⊑I Á I∭NI		Scale   D	ate & time	Duration	In	Out	Name
1 2								
1 2				2023-05-04 02:57:00:00				
(A) 1 2				2023-05-04 03:00:29:02	01:00:00:00			NewTek NDI
12				2023-05-04 04:00:29:02	00:00:15:16	00:00:00:00	00:00:15:16	The burger drop.mp4
12				2023-05-04 04:00:44:18	00:02:00:00	00:00:00:00	00:02:00:00	DoYouKnow_2min_v2.mp4
12				2023-05-04 04:02:44:18	00:05:00:00	00:00:00:00	00:05:00:00	New record output 01_20220
12				2023-05-04 04:07:44:18	00:02:37:24	00:00:00:00	00:02:37:24	Rammstein - Europe Stadium
12				2023-05-04 04:10:22:17	00:00:40:01	00:00:00:00	00:00:40:01	The Art of Baking.mp4
				2023-05-04 04:11:02:18	00:00:15:16	00:00:00:00	00:00:15:16	The burger drop.mp4
1 2				2023-05-04 04:11:18:09	00:00:45:00	00:00:00:00	00:00:45:00	01-20170328.mp4
12				2023-05-04 04:12:03:09	00:01:11:10	00:00:00:00	00:01:11:10	DoYouKnow_2min_v2.mp4
				OVERRUN +00:18:14:19				
1 2				2023-05-04 03:55:00:00	00:00:19:24	00:00:00:00	00:00:19:24	BARS and TONE.mxf
1 2				2023-05-04 03:55:19:24	00:02:00:00	00:00:00:00	00:02:00:00	DoYouKnow_2min_v2.mp4
1 2				2023-05-04 03:57:19:24	00:00:47:08	00:00:00:00	00:00:47:08	Wine.mp4

Figure 310. Overrun, part 1

The example above shows a fragment of the OnAir schedule with a Fixed time for the schedule row located in the bottom of the screen.

The schedule row marked in yellow contains a Live event. The duration of Live is one hour and obviously exceeds the time remaining until the Fixed Time.

Yellow color means that Live will not be played in full; the Live playback will be interrupted at the moment of Fixed time.

This situation is normal, for example, for studio Live - the duration cannot be precisely set in advance. Therefore, the duration of the Live event is set with a reserve.

The schedule row marked with Fixed time, contains the event with previously known playback time. For example, news block.

Schedule rows between Live and Fixed time are marked in red. This means that none of the events will be played. However, since the duration of the Live event is so long, it can be changed down directly during Live playback.

AirX Channel [	New ch	annel 2] OnAir: Sc	hedule	1						
Show OnAir	Edit	Show columns	چ	▶ 3	May	2023, Wednesday				
Type	CC	I ↓ I ₩1		Scale	Date	e & time	Duration	In	Out	Name
										DoYouKnow_2min_v2.mp4
					6					2178.mp4
(( _Å ))						2023-05-04 03:00:29:02	00:45:00:00			NewTek NDI
						2023-05-04 03:45:29:02	00:00:15:16	00:00:00:00	00:00:15:16	The burger drop.mp4
						2023-05-04 03:45:44:18	00:02:00:00	00:00:00:00	00:02:00:00	DoYouKnow_2min_v2.mp4
						2023-05-04 03:47:44:18	00:05:00:00	00:00:00:00	00:05:00:00	New record output 01_20220
	12					2023-05-04 03:52:44:18	00:02:37:24	00:00:00:00	00:02:37:24	Rammstein - Europe Stadium
						2023-05-04 03:55:22:17	00:00:40:01	00:00:00:00	00:00:40:01	The Art of Baking.mp4
						2023-05-04 03:56:02:18	00:00:15:16	00:00:00:00	00:00:15:16	The burger drop.mp4
						2023-05-04 03:56:18:09	00:00:45:00	00:00:00:00	00:00:45:00	01-20170328.mp4
						2023-05-04 03:57:03:09	00:01:11:10	00:00:00:00	00:01:11:10	DoYouKnow_2min_v2.mp4
						OVERRUN +00:03:14:19				
					9	2023-05-04 03:55:00:00	00:00:19:24	00:00:00:00	00:00:19:24	BARS and TONE.mxf
						2023-05-04 03:55:19:24	00:02:00:00	00:00:00:00	00:02:00:00	DoYouKnow_2min_v2.mp4
						2023-05-04 03:57:19:24	00:00:47:08	00:00:00:00	00:00:47:08	Wine.mp4

Figure 311. Overrun, part 2



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In the figure above, the duration of the Live event has been shortened (45 minutes instead of an hour).

As a result, red highlighting was removed from several schedule rows. This means that these rows are between the end of Live and the Fixed time event. That is, they will be played.

# Manual GC/Events

You can manage the CG overlay manually, using the **AirX Channel Manual GFX ctrl** window of the Channel Manager client application. This can be useful for launching the additional CG scenes in manual mode on top of auto-played scenes.



Figure 312. Channel Manual GFX ctrl window

You can add CG scenes to empty slots of the Manual GFX window at any time (up to 8 slots at a time) and control the playback of selected scenes manually. See the **Channel Manual GFX ctrl window** chapter for details.

And also you can manage the external control signals using the additional **AirX Channel Manual Events ctrl** window, described in the corresponding chapter of the current document.

The window contains 16 slots for external events to control the execution of the AirX schedule, the AirX Record recording schedule, as well as any external devices connected to the broadcast playout server (see the **External devices** chapter for details).

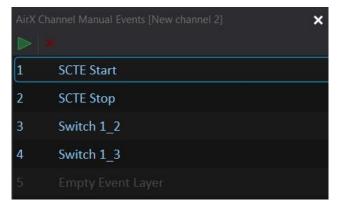


Figure 313. Channel Manual Events window



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# **Command control pane**

Command control pane allows you to create a custom layout for the quick command control. You can control the execution of the AirX schedule, the external events or channel CG. The Channel command pane is an additional app window, so the custom layout can be located on a separate touch-panel and used as an external control device.

Please see the **Channel command pane** chapter for detailed description.

10000000	Channel Cor	nmand [New channel 2]													×
@ 831															
42	Đ	Switch to Playlist	\$			۲		Turn OFF Logo slot	\$	$\triangleright$	Play	\$	A		<b>(</b>
6		No			No						No			Na	
		Switch to Schedule	\$	$\triangleright$	2	\$		Logo by schedule	٢		Stop	\$	В	Channel B	8
		No			No						No		0	No	
	•	Jump OnAir	ø	$\triangleright$	3	\$	-	Logo 1		00	Pause	۲			
		No			No										
			\$	$\triangleright$		\$		Logo 2		8	Pause view	۲			
		No			No						No				
		Skip	٢	$\triangleright$	5	¢		Logo 3	\$	da -	Loop	\$			
		No			No										
	a	Lock all buttons	\$	$\triangleright$		\$	-	Logo 4		+-	Single	۲			
	45	Lock the selected buttons	\$	$\triangleright$	7	¢									
					No										
	ê	Lock interface	\$	$\triangleright$	8	\$									
		No			No										

Figure 314. Channel command pane

# Live streams and additional playlists. Prescheduling workflow.

This chapter describes both the Schedule and the Playlist modes.

The Prescheduling workflow can be described as the inclusion of additional playlists in the OnAir schedule. You can switch the Schedule/Playlist modes to edit the active on-air schedule without interrupting the channel playback.

# Schedule/Playlist modes

AirX broadcast automation has two predefined workflows: "Schedule" – on-air playback according to a dated schedule and "Playlist" – according to a looped playlist. You can find the detailed description in the **Channel OnAir window, Playlist mode** and **Channel OnAir window, Schedule mode** chapters.

You must set the Schedule/Playlist mode during the initial setup of the Playout channel but you can change it later in any time (see the **Playout channel addition and setup** chapter for details).

You can also switch the Schedule/Playlist mode directly from the client workplace application, if you have the relevant user permissions (see the **Users** chapter for



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details). Use the **OnAir** item of the Channel Manager **Control menu** to switch the mode.

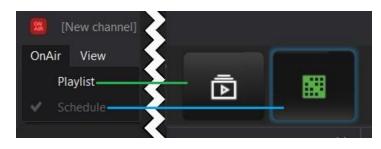


Figure 315. Playlist/Schedule modes

The interface of the Channel OnAir window depends on the selected mode.

You can edit the on-air schedule right during its execution (playback) by using additional playlists. Please follow the instruction:

- Initial state: The Playout channel is set to the Schedule mode (Figure 316, point 1), the on-air schedule is played normally, the Live event is at the playback position – green schedule row. You can find the description of Live video workflow in the Live streams and frequently changing schedules. Live video workflow. chapter of this Document.
- At the moment, you already have additional playlist that will be on-air after switching the mode. You have to prepare it in advance. Please look the **How to:** Make the simple schedule of files chapter for details.
- 3. Click the **Channel Programming** branch of the Channel resource tree and you will see two items in the Source content browser window: OnAir Playlist and OnAir Schedule. Please check that OnAir Schedule item is green.

					0		
[New channel 2] AirX Channel manage							~
OnAir View Help Lock interface						<u>(</u>	1
Counter 2023-05-04 00:04:45: Time		NewTek NDI			→ ▶	ō	
23:42:04:07 00:40:14:	00	(A)	140 🖂 🔄 🔼 🖂				
AirX Channel Source [New channel 2]							
> Scene	Show OnAir Edit S	how columns 🛛 🔳	4 May 2023, Thursday				(555) (555)
Logo	Type   CC		cale   Date & time	Duration	Name	Source	
> 🌐 Web URL	1 2		2023-05-04 03:55:00:00				-60.0 L
Events	1 2						— 24 dB
Plugins	1 2						
Channel programming     Schedule	(j) 1 2		2023-05-04 23:37:18:07	00:45:00:00	NewTek NDI	NewTek	
Playlist	1 2						— 18 dB
Media folders	12		🧧 🕓 2023-05-05 00:22:33:23	00:02:00:00	DoYouKnow_2min_v2.mp4	D:\medi	
			🧾 🕒 2023-05-05 00:24:33:23	00:05:00:00	New record output 01_2022	01 D:\medi	
Source content browser Type Name	1 2		🧧 🕓 2023-05-05 00:29:33:23		Rammstein - Europe Stadiun	n1D:\medi	— 12 dB
D OnAir Playlist	1 2		📃 🛯 ۞ 2023-05-05 00:32:11:22	00:00:40:01	The Art of Baking.mp4	D:\medi	
OnAir Schedule	12				The burger drop.mp4	D:\medi	— 6 dB
and schedule	1 2		2023-05-05 00:33:07:14	00:01:11:10	DoYouKnow_2min_v2.mp4	D:\medi	6 dB
	1 2		🧧 🕓 2023-05-05 00:34:18:24		2178.mp4	D:\medi	

Figure 316. Prescheduling workflow part 1

Double-click the **OnAir Playlist** item (Figure 316, point 2). This action will open the OnAir playlist in an additional window.

4. Before you start editing the playlist please verify that OnAir playlist is not active (Figure 317, point 3). Then click the **Playlist** item of the Channel programming branch in the Channel resource tree (Figure 317, point 4). You will see a list of available playlists in the Source content browser window.

Select the playlist from the list and drag it to the Playlist OnAir window.

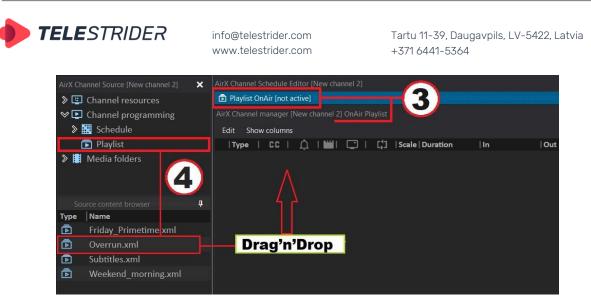


Figure 317. Prescheduling workflow part 2

5. If you do not have a previously prepared playlist, you can make it manually right in the OnAir Playlist window.

Open the OnAir Playlist in an additional window as described above. Before you start editing the playlist please verify that OnAir playlist is not active (Figure 318, point 5) and then expand the **Media folders** branch of the Channel resource tree. Select the folder you want to use. You will see a list of available video files in the Source content browser window (Figure 318, point 6).

Select files from the list and drag them to the Playlist OnAir window.

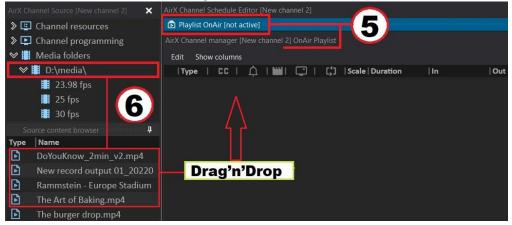


Figure 318. Prescheduling workflow part 3

- 6. ATTENTION: Now your pre-prepared playlist is an OnAir Playlist! Close the additional window you worked with and return to your OnAir Schedule. All the time you worked with the Playlist, your OnAir Schedule was playing. Now you have to wait for the time you want to switch the OnAir Schedule to the OnAir Playlist.
- 7. Switch the mode when you are ready, using the **OnAir** item of the Channel Manager **Control menu** or the control buttons.
- 8. While the OnAir Playlist is playing, you can edit the OnAir Schedule in an additional window, just like you edited the OnAir Playlist before. For example, you can trim the Live event in the Schedule.
- 9. When the OnAir Schedule is ready and the editing is complete, switch the mode back.

The described workflow allows you to avoid the Overrun conditions in the schedule, but note, that this workflow requires a **high level** of user competence.



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If you want to use additional playlists, please read the **Scheduling of Simple TV channels** chapter for details and "How to" instructions.

And also, the **Overrun and frequently changing schedules** and **Fixed time** chapters may be useful.

### Manual GC/Events

In the Prescheduling workflow you can also manage the CG overlay manually, using the **AirX Channel Manual GFX ctrl** window of the Channel Manager client application. This can be useful for launching the additional CG scenes in manual mode on top of auto-played scenes.



Figure 319. Channel Manual GFX ctrl window

You can add CG scenes to empty slots of the Manual GFX window at any time (up to 8 slots at once) and control the playback of selected scenes manually. See the **Channel Manual GFX ctrl window** chapter for details.

And also, you can manage the external control signals using the additional **AirX Channel Manual Events ctrl** window, described in the corresponding chapter of the current document.

The window contains 16 slots for external events to control the execution of the AirX schedule and the AirX Record recording schedule, as well as any external devices connected to the broadcast playout server (see the **External devices** chapter for details).

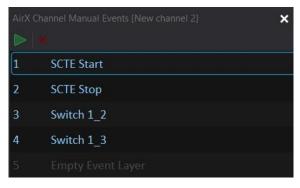


Figure 320. Channel Manual Events window



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# **Command control pane**

Command control pane allows you to create a custom layout for the quick command control. You can control the execution of the AirX schedule, the external events or channel CG. The Channel command pane is an additional app window, so the custom layout can be located on a separate touch-panel and used as an external control device.

Please see the **Channel command pane** chapter for detailed description.

	hannel Cor	mmand [New channel 2	1												×
(\$) 11 12 12 12 12 12 12 12 12 12 12 12 12				External eve									Redundar	су	
6	Đ	Switch to Playlist	\$	$\triangleright$		\$		Turn OFF Logo slot	\$	$\triangleright$	Play	٢	A		\$
		Na			No						Na			Na	
		Switch to Schedule	¢	$\triangleright$		٢		Logo by schedule	\$		Stop	٢	В		8
		Na			No						Na			No	
	•	Jump OnAir	1	$\triangleright$	3	\$	-	Logo 1		00	Pause	۲			
		No			No						Na				
			0	$\triangleright$		\$		Logo 2		-	Pause view	۲			
		No			No						Na				
		Skip	۲	$\triangleright$	5	\$		Logo 3	٤	¢	Loop	۲			
		No			No						No				
	a	Lock all buttons	\$	$\triangleright$		٢		Logo 4		-+-	Single	۲			
					No										
	ež.	Lock the selected buttons	\$	$\triangleright$		\$									
					No										
	ê	Lock interface	\$	$\triangleright$	8	\$									
		No		-	No										

Figure 321. Channel command pane

# AD insertion (DAI) workflow

The dynamic ad insertion (DAI) technique is used for adding commercials into linear live streams, such as TV broadcasts. Using DAI, a regional TV provider can embed "local" advertising into a broadcast.

# Schedule automatic import

In the AD insertion mode, the most of the airtime falls on the rebroadcasting of an external signal. Usually you have to receive a broadcast schedule with marked AD slots from the head channel. The AirX software has the auto-import functionality to get schedules created by any third-party software from external sources. Please see the **Schedule automatic import** chapter for details.

The schedules created by any third-party software must support the playlist format used by AirX to be imported.

Auto schedules require specific naming structure in order to be played on the desired date and time automatically. The structure is: **YYYY.MM.DD**, where YYYY stands for year, MM-month, DD-date. **EXAMPLE**: If the name of the schedule is "2023.05.07.xml", it will be loaded on May 7th, 2023 exactly.



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You can import schedule files for unlimited days in advance. All schedules will be automatically uploaded to the on-air schedule upon reaching the specified date without any additional actions.

# **AD** insertion markers

The dynamic ad insertion method uses ad insertion markers to prepare a stream for ad insertion. Markers are stream's metadata that indicates the ad insertion event. This event means that you can embed a commercial of certain duration in certain place of a video stream. This place (a cue splice point) in a stream allows smooth switching to another stream (such as a commercial) and back to the main video.

Ad insertion markers are created according to various standards. The most popular standard is SCTE-35 but AirX broadcast automation also supports DTMF and SCTE-104.

#### AD insertion markers detection

 Operation with DTMF and SCTE-35/104 requires the additional license for each channel. Launch the **AirX Config** server application. Make sure your license includes AD insertion markers detection – expand the Server resource tree and browse to the **License info** branch. In the **Detection DTMF, SCTE-35/104, Plugin Events** line the value must be 1 or more.

♥ 🖵 AirX server	♥ License settings		
	License		
License info	License ID:	6000000000002888888	
> ₽ Assigned lives			
Sector and the sector of the s	✤ License info		
🛇 🛐 Playout channels	License info: Ke	y ID: 600000000000028	8888
Channel 1	Technical Suppo	rt	The status was
Channel 2			Used / Available
	SD Channels		0/1
	HD Channels		1/1
	UHD Channels		0/1
	AV Outputs		1/1
	UDP TS Outputs		0/1
	Internet Outputs		1/2
	SMPTE-2110 Stre	ams	0/1
	Hard Subs Chanr	nels	0/1
	Subtitles Tracks		1/2
	CG Channels		1/2
	Detection DTMF,	SCTE-35/104, Plugin Ever	1/2
	Generate SCTE-3	5/104 Events	1/2
	Generate Plugin	Events	1/1

Figure 322. AD markers detection license

2. Expand the Assigned lives branch of the Server resource tree to see available Live sources, connected to the broadcast playout server (see the **Channel live inputs** chapter for details).

Select the desired Live and click it to open the Settings pane on the right side of the app window. Scroll down the settings and find the DTMF and SCTE-35/104 panes.

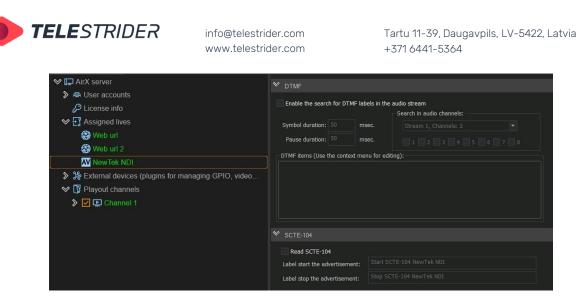


Figure 323. DTMF and SCTE-35/104 settings

3. Set up the input cue according to the instructions in the chapters corresponding to the type of signal you receive (see the **Channel live inputs** chapter for details).

In the following example you can see the NDI input stream.

#### **DTMF input settings:**

		Search in audio channe	els:	
mbol duration: 50	msec.	Stream 1, Channels	: 2 🗸 👻	
ause duration: 50	msec.	1 2 3		
MF items (Use the contex	t menu for e	diting):		
Add new DTMF i	item	1		
Edit	lem			
Euit				
Delete				
Delete				
Delete				
				×
Delete DTMF Item Name		Value	Delay (msec.	
DTMF Item		Value #ABC	Delay (msec. 0	

Figure 324. DTMF input settings

Check the **Enable the search for DTMF labels in the audio stream** checkbox to enable the DTMF monitoring mode. After checking the box, the remaining fields of the settings section will become available.



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- Symbol duration to set the duration of the DTMF keys (0-9, #, *, A, B, C, and D)
- **Pause duration** to set the duration of the pause between keys
- Search in audio channels with numbers from 1 to 8, to specify the audio stream in which the DTMFs will be searched
- DTMF items field intended for entering the DTMF search mask (value and order of keys in the DTMF, for example #ABC).

Click **Save** to save changes, then **Restart** to restart the AirX server after setup is finished.

#### SCTE-104 input settings:

♥ SCTE-104	
✔ Read SCTE-104	
Label start the advertisement:	Start SCTE-104 NewTek NDI
Label stop the advertisement:	Stop SCTE-104 NewTek NDI

Figure 325. SCTE-104 input settings

Check the **Read SCTE-104** checkbox to enable the SCTE-104 monitoring mode. Click **Save** to save changes, then **Restart** to restart the AirX server after setup is finished.

4. Launch the **Channel Manager** client application to add AD insertion markers into the schedule.

AirX Channel [New char								
Show OnAir Edit S	Show columns 🛛 ┥	e 📰 🕨 29 i	March 2023, W	ednesday				
Type   CC   🛕	ा 🞬 । 🖵 ।	Scale   Date & tir	ne	Duration	Name	In	Out	ExtEvent
<b>1</b> 2			3-03-29 06:53:11:13	00:55:29:03	2239.mp4	00:00:00:00	00:55:29:03	
			3-03-29 07:48:40:16	00:57:42:10	2178.mp4	00:00:00:00	00:57:42:10	
(A) - (1)			3-03-29 08:46:23:01	01:00:00:00	NewTek NDI			
			3-03-29 09:46:23:01	00:02:21:02	Block item		- 0	DTMF Start
1 2		202	3-03-29 09:46:23:01	00:00:20:01	Pepsi.mp4	00:00:00:00	00:00:2	DTMF Start
1 2			3-03-29 09:46:43:02	00:00:30:00	The Art of Baking.mp4	00:00:00:00	00:00:30:00	
1 2		202	3-03-29 09:47:13:02	00:00:30:01	The burger drop.mp4	00:00:00:00	00:00:30:01	
1 2			3-03-29 09:47:43:03	00:00:20:01	Rammstein - Europe Stadiur	m00:00:00:00	00:00:20:01	
1 2		202	3-03-29 09:48:03:04	00:00:20:12	Pepsi.mp4	00:00:00:00	00:00:20:12	
1 2		202	3-03-29 09:48:23:16	00:00:20:12	The Art of Baking.mp4	00:00:00:00	00:00:20:12	
((+)) 1 2 Å			3-03-29 09:48:44:03	01:00:00:00	NewTek NDI		3	DTMF Stop
12			3-03-29 10:48:44:03	00:00:04:05	19772.mp4	00:00:00:00	00:00:04:05	
12		C 202	3-03-29 10:48:48:08	00:00:03:00	19746.mp4	00:00:00:00	00:00:03:00	

Figure 326. DTMF labels in the schedule

You can see the schedule with DTMF events on the Figure above:

- The Live input stream from the head channel with the Manual Exit flag. The Manual Exit flag means that Live is waiting for an external event (or user's actions) to jump to the next event. Until AirX receives an incoming command, Live playback will not stop, regardless of its duration.
- 2. The AD insertion block with the ExtEvent parameter. The ExtEvent means that the schedule playback will jump to this schedule row only after the external event (in this case, DTMF Start).

If you want to set the ExtEvent, expand the drop-down list in the ExtEvent column and select an event from the list.

Please see the **How to: Add and edit a Block** chapter for Block item description and instructions.



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Please note that if you want to set an ExtEvent to a block, you must set a parameter to the first video clip included in the block.

3. Live input stream from the head channel without the Manual Exit flag and with the ExtEvent parameter set. In this case, the ExtEvent parameter of the Live means that when you receive the DTMF Stop event, the commercial block will stop (regardless of whether it was played in full) and the playback will switch to the main video. If the DTMF Stop will not be received for any reason, the commercial block will be played in full and then the schedule will continue with the Live.

You can use SCTE-35/104 in the schedule as well as DTMF, all actions will be the same.

#### AD markers insertion

 SCTE-35/104 insertion requires the additional license for each channel. Launch the AirX Config server application. Make sure your license includes SCTE-35/104 insertion - expand the Server resource tree and go to the License info branch. In the Generate SCTE-35/104 Events line the value must be 1 or more.

♥ I⊒ AirX server	♥ License settings	
	License	
🔑 License info	License ID: 600000000	00002888888
Solution State		
Sector and the sector of the s		
♥ Playout channels	License info: Key ID: 600000	0000000288888
Channel 1	Technical Support	
<ul> <li>Channel 2</li> </ul>		Used / Available
	SD Channels	0/1
	HD Channels	1/1
	UHD Channels	0/1
	AV Outputs	1/1
	UDP TS Outputs	0/1
	Internet Outputs	1/2
	SMPTE-2110 Streams	0/1
	Hard Subs Channels	0/1
	Subtitles Tracks	1/2
	CG Channels	2/2
	Dotaction DTME SCTE 25/10/	1 Diugin Evon: 0.7.2
	Generate SCTE-35/104 Events	0/1
	основаю годин столо	

Figure 327. AD markers insertion license

 Expand the Playout Channels branch of the Server resource tree and click to the desired channel to open the settings pane on the right side of the app window. Scroll down the settings and find the SCTE Events Generation pane. Check the Generate SCTE checkbox and rename the Labels names if necessary.

♥ I⊒ AirX server	Stream Disabled  Lang:
	Stream Disabled V Lang: Warning! Text style changes apply after restart channe!!
🔑 License info	
>> E Assigned lives	♥ Channel folders
🎇 External devices (plugins for managing GPIO, video	The root folder of the channel
🛇 🕼 Playout channels	D:\Ch1_PSI
Image: Second	Log folder
Channel 2	C:\ProgramData\
	✓ Generate SCTE
	Label start the advertisement: SCTE Start
	Label stop the advertisement: SCTE Stop
	Passthrough SCTE Events

Figure 328. SCTE Events Generation



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If you just want to detect ad insertion markers that come with an input stream and pass them to the output stream (without your own markers generation), check only the **Passthrough SCTE Events** checkbox. But this also requires the additional license for each channel.

3. Expand the Channel resource tree and select the Output you want to use. Set up the output cue according to the instructions in the chapters corresponding to the type of your output signal (see the **Outputs** chapter for details).

n th	e follov	ving exa	mple you	i can see	e the ND	l output s	stream.
------	----------	----------	----------	-----------	----------	------------	---------

♥ 🖵 AirX server	✓ Name\Description
	Output name and description
🔑 License info	Name New channel AV output
Salar Street Str	Description
🎇 External devices (plugins for managing GPIO, video	Output device NewTek NDI
🛇 🗓 Playout channels	
🛇 🔽 🗈 Channel 1	♥ Video∖Audio
緣 Users	NewTek NDI output name NewTek NDI group
Channel redundancy (1 + 1 redundancy settings)	NewTekNDI
Media folders and content replacement	Available resolutions Dynamic Range
Ghannel TAGs and EPG	Native SD PAL 4:3 720x576, 25 f 🔻 SDR 💌
Channel live inputs	Format of the channel and ouput format of AV card MUST MATCH! Assign format for the card
📟 External Device Inputs	matching to the channel format (if available) or change format of the channel.
📟 External Device Outputs	Output audio matrix
🛇 🔁 Outputs	Output audio matrix settings
AV New channel AV output	
🔀 New SRT (DVB) output	♥ Subtitles
Image: Second	Subtitles Teletext/OP-42(47) (eng) Main codepage: Secondary Closed Captions (eng)
	✓ Enable Page: 888 ← English ▼ English ▼ English ▼
	Subtitles Teletext/OP-42(47) (eng) Main codepage: Secondary Closed Captions (eng)
	✓ Enable Page: 100      ✓ English      ✓ English      ✓ English      ✓ English
	Disabled Main codepage: Secondary Disabled

Figure 329. Enable SCTE-104 Events in NDI Output

Check the Enable SCTE-104 Events checkbox.

Click **Save** to save changes, then **Restart** to restart the AirX server after setup is finished.

4. Launch the **Channel Manager** client application to add AD insertion markers into the schedule.

AirX Channel Source (New channel 2)					×
Section 2015 Channel resources	🚯 Test_schedule.xml				
👯 Live					
👑 Scene	Edit Show columns 🖪 📖	18 January 2023, Wednesday			
Logo	Type   CC   A   M	📑   Scale   Date & time	In Out	Duration Name	
🔉 🌐 Web URL		Image:		00:03:41:08 ALIVE Canada 4K_1.mp4	
♥ û Events	1.2	🗉 🧧 🔍 2023-01-18 00:03:41:08		00:02:46:11 Aerial Drone 4K Time	
(2)	( <u>1</u> ) 1 2	Image:		01:00:00:00 NewTek NDI	
🗘 Output	1 **	Image:		00:03:13:11 Football in Ultra HD (2160p 4k)	1.mp
Plugins	(k) 12	Image:		01:00:00:00 NewTek NDI	
Channel programming		Image: 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 10	00:00:00:00 00:02:04:21	00:02:04:21 Macro Match Light [ 4K Slow M	
Media folders		💷 📃 🕓 2023-01-18 02:11:46:01	00:00:00:00 00:02:46:11	00:02:46:11 Arrial Drone 4K Time	
	12			00:03:13:11 In Ultra HD (2160p 4k)	
Source content browser <b>P</b> Type Name SCTE Start SCTE Stop	I Hem's Scenes		a D Item's output events		
	Layer Offset start time	rag'n'Drop			rogram
		ag in prop	1 00:02:04:21 0	0:00:00:00 SCTE Start 0	
			2		
				4)	
			4		
					- 1
	Duration of item(s) 00:02:04:21	Selected item(s) 1 Ready		NUM	

Figure 330. SCTE markers in the schedule

- 1. Select the schedule row to add the SCTE output event (Figure 330, point 1)
- Expand the Channel resource tree on the left side of the app window. Expand the **Events** branch to see the list of events. Select the **Output** item (Figure 330, point 2).



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- After you click the Output item, you will see the list of available external events (SCTE markers) in the Source content browser window (Figure 330, point 3). Select the desired SCTE and drag it to the **Item's output events** window (Figure 330, point 4).
- 4. Edit the SCTE parameters in the Item's output events window: Offset start time, Preroll etc. See the **Item's Output Events window** chapter for details.
- 5. After you add the SCTE output event to the Item's output events window you will see a **bell icon** in the AirX Channel OnAir window. It will appear on the schedule row where you have added the output event. So you can visually check output events in the schedule.

# Input redundancy

The main requirement for the dynamic AD insertion is the high quality input signal and its stable decoding. AirX broadcast automation has the built-in Input redundancy to solve this issue. Each of the input streams is in a continuous monitoring state by AirX services. This feature provides real-time monitoring of the connection state and the signal quality of the input stream. In case of disconnection or quality loss, AirX allows you to replace the failed Input with a backup one in three seconds. It will be switched automatically without any additional user's actions.

Input redundancy settings:

♦ 🖵 AirX server	✓ Filling empty block content
<ul> <li>&gt; A User accounts</li> <li>              ∠icense info      </li> <li>             T Assigned lives             Assigned lives         </li> <li>             Web url         </li> </ul>	Black field     Media file     Live input     Web url 2
B Web url 2	♥ Auto replace failed element
<ul> <li>              &amp; External devices (plugins for managing GPIO, video      </li> <li>             Playout channels         </li> </ul>	Black field
♥ ✔ ⊡ Channel 1	Live input Web url 2
緣 Users	✓ Enable failed live autoreplace
Channel redundancy (1 + 1 redundancy settings)     Media folders and content replacement	♥ Media folders
Channel TAGs and EPG	Add Remove 2
❤ E⊉ Channel live inputs	D:\media\
Web url Web url 2	
📟 External Device Inputs	
External Device Outputs	
Second Se	

Figure 331. AirX Input redundancy

- You have to configure two input Live signals the main and the backup ones (see the **Channel live inputs** chapter for details). Both of these signals must be connected to the Playout channel (the connection settings are described in the **Live sources connection and distribution** chapter).
- Expand the Channel resource tree and click the Media folders and content replacement branch to open the settings pane on the right side of the app window. Find the Auto replace failed element pane in the settings. This pane is intended for automatic replacement of damaged schedule elements and has the following options:
  - Black field auto-replace an element with a black screen
  - Media file auto-replace an element with a media file



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- Live input - auto-replace an element with Live source

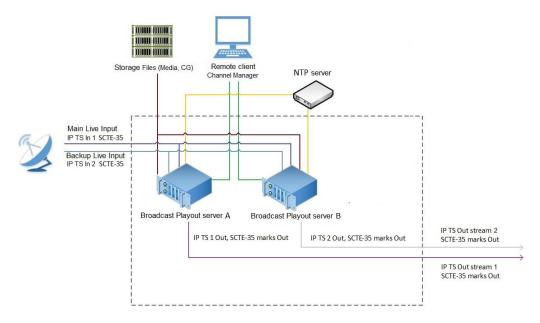
By default, all of the auto-replacement options are applied only to corrupted video files in the schedule. However, in the same pane there is a checkbox **Enable failed live autoreplace**. When activated, all the options will also be applied to the damaged Live source. Check the box and select the backup Live from the drop-down list.

The Input redundancy is one of AirX's core features and does not require an additional license.

# AirX channel redundancy (1+1)

AirX software has a built-in 1+1 redundancy, based on the independent synchronous work of two playout channels controlled from one client workstation. Redundancy mode requires the additional license for each channel.

The redundancy scheme includes two broadcast playout servers. Primarily they are only synchronized by the time parameter, using the Network Time Protocol (NTP server). The only thing that connects these two servers is a **setting** that shows to the client application that these two servers are working in pair.



#### Figure 332. AirX channel redundancy (1+1)

For the client application, the redundant servers are displayed as the single playout channel. But the broadcast is being made from two servers in every moment of time. When the servers are connected in such redundancy, synchronization point is a **client application** that sends commands to both servers at the same time

In the AirX Launcher application, channels, added in redundancy mode, are named **A** and **B**. This **does not mean** that server A is the main one, and server B is the backup (!) Servers and channels in 1+1 mode are completely equal and letters A and B are assigned randomly.



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Schedules and files must be uploaded to both servers. All paths, files and schedules must be identical. All the basic settings of servers and the settings of playout channels must be identical! Please read the **Channel redundancy (1+1 redundancy settings)** chapter for detailed description of redundancy settings.

# **Color-coding of redundancy states**

While working in redundancy mode, you can control the state of the redundancy from the Channel Manager client application.



Figure 333. Redundancy is Ok

The green color of the schedule switching buttons means that the servers are working normal and synchronously.



Figure 334. Channels are out-of-sync

Orange color means that schedule synchronization is broken (channel schedules are not identical) or it is up to 5 frames out of sync between servers.

This is easy to check by switching the schedule A and B using the buttons - the numbers in the Countdown field of the top menu will be different. Therefore, the schedules are not synchronized.

You can correct this manually using the **Redundancy** -> **Synchronize channel** items of Channel Manager control menu.



Figure 335. The channel is unavailable

Red alert illumination of one of the buttons means a critical error - one of the broadcast playout servers is unavailable. In this case, the server troubleshooting is required.



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Figure 336. Both channels are unavailable

Red alert illumination of both channels means that the client application cannot connect to both broadcast playout servers. In this case, a complex troubleshooting of the broadcast automation is required.

# Synchronization of schedules

The redundant servers work synchronously and additional synchronization of schedules is not required. However, if an out of sync event happens (orange color of the schedule switching buttons), manual synchronization is also possible.

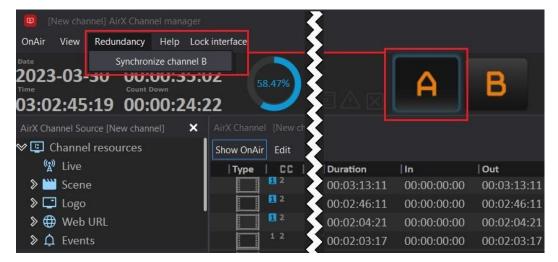


Figure 337. Manual synchronization of schedules

 Select schedule A or B. Expand the **Redundancy** main menu item and click Synchronize channel. The schedule of the second channel will be synchronized to the selected one.

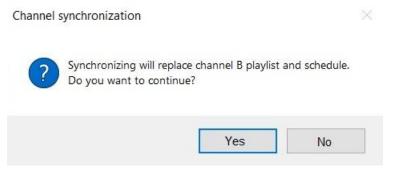


Figure 338. Channel synchronization alert

2. A pop-up window will warn you that the air schedule and playlist of the synchronized channel will be replaced by the current schedule and playlist of the main channel. Confirm sync.



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Figure 339. Synchronization progress

3. During the synchronization process, the button of the synchronized schedule will be marked with a circular progress bar. At the end of the synchronization process, the buttons of both schedules will turn green.

# **Channel redundancy errors**

All standard errors that are possible in a single channel schedule playback are also possible in a schedule operating in redundancy mode. This includes errors of primary events (a video file missing from the storage server or critically damaged video), errors of the CG overlay, external events or Live input errors.

**ATTENTION**: Please note that schedule errors in redundancy mode do not change the color of schedule switching buttons!

The buttons display only the current state of channels synchronization with the local time server (NTP server). All schedule errors of channels A and B will be displayed by warning icons (see the **States of the schedule elements. The color-coding and navigation.** chapter for details). Please note that errors in schedules A and B are not identical, they must be fixed individually for each channel.

TELESTRIDER	info@telestrider. www.telestrider.		Tartu 11-39, +371 6441-5	Daugavpils, LV-5422, Latvia 5364
20.83% Stream 20.83% 347698 % To			В	
AirX Channel [New channel] OnAir: S				
Show OnAir Edit Show columns		7:0000:00:00:005:0400:00:00:00	Out           00:05:27:00           00:00:15:04           00:02:12:00	Name 290776.mp4 Pexels Videos 898979.mp 285335.mp4
Item's Scenes			📮 Item's outp	
Layer   Offset start time   Offset	end time Duration	Name	# Offset s	start time Offset end time
2 00:14:33:00 00:00	):00:00 00:00:10:00		2	
3			3	
4 00:00:00:00 00:00	0:15:04 00:00:10:00	cat	4	
20.83% Stream	3.mp4		В	• •
AirX Channel [New channel] OnAir: So				
Show OnAir Edit Show columns	[*]   [*]  Scale   Duration [*] [*]   00:05:2 [*] [*]   00:00:1	7:00 00:00:00:00	Out 00:05:27:00 00:00:15:04	Name 290776.mp4 Pexels Videos 898979.mp
	🖸 🖾 🗐 00:02:1	2:00 00:00:00:00	00:02:12:00	285335.mp4
Item's Scenes		ą.	📮 Item's outp	
Layer Offset start time Offset	end time Duration	Name	# Offset	start time Offset end time
Layer   Onset start time   Onset			1	
1	0:00:00 00:00:10:00		1 2 3	

Figure 340. Schedule errors in redundancy mode

As you can see in the example above, the schedules of both channels have a CG overlay errors, marked with the Error icon and highlighted in red in the schedule field.

On server A, the CG scene "weather" is missing; on server B, the CG scenes "weather" and "cat" are missing. At the same time, the color of the schedule switching buttons is green and the synchronous operation of the servers that are in redundancy is Ok.

# **Group operations in AirX**

AirX broadcast automation allows multiple selections of schedule elements and group operations with them. This may be useful for manual scheduling because it reduces the operating time. The standard keyboard shortcuts for multiple selections:

- Select an entire fragment of the schedule **Shift** + click on the first and the last elements of the fragment you want to select.
- Several separate elements of the schedule **Ctrl** + click on each of the elements you want to select.



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irX Channel [New channe	el 2] OnAir: Schedule					
now OnAir Edit Sho	ow columns				<u>F</u> ind	Ctrl+F
Type   CC		[t]  Scale	Duration	Name	Cu <u>t</u>	Ctrl+X
1 2		(1) 🔲	00:00:30:01	Macro Match Light 4K	<u>С</u> ору	Ctrl+C
1 2		da 🗖	00:00:20:12	Aerial Drone		
1 2		ф 🔲	00:00:20:01	Speakeasy Drink Creation	Delete	Delete
1 2		() 🗖	00:00:20:01	Pacifica California	Delete and fill empty	
1 2		(1 🗖	00:00:30:00	Out of town Aerial Drone	Select all	Ctrl+A
12		ija 🗖	00:00:20:12	DoYouKnow_2min_v2	Scale mode	Ì
1 2		c) 🗖	00:00:20:12	Macro Match Light 4K	External event Logo slot	•
					Manual exit	
er   Offset start time	Offset end time	Duration	Nam	e	_	~~~~
					Export to file	
					Export selected to file	
					Show errors\warnings	info Ctrl+E

Figure 341. Multiple selections of schedule elements

The following context menu actions are available for a selected group of elements:

- 1. Standard **Cut, Copy, Paste** actions. If you copy and then paste multiple elements selected with Ctrl, they will be added to the schedule as an entire block without any schedule rows between them.
- 2. You can **Delete** a group of elements. If you work with the Schedule (not Playlist), please note, that all the schedule rows hold positive times in the Date & time column, calculated according to the current time and the duration of the preceding clips. If you delete any schedule rows, the starting times of the following clips will be recalculated accordingly. That is because AirX has an additional deletion option **Delete and fill empty block** (Shift + Delete). If you use this feature to a group of schedule rows selected with Ctrl, a separate empty block (dummy clip) will be added to the schedule instead of each deleted row (in the corresponding position).
- 3. **Scale mode**: LetterBox, Pan & Scan or Anamorph scale modes can be applied to the group of selected video files
- 4. **External event** you can assign or cancel an external event for a selected group of elements:
  - Turn event OFF
  - Start SCTE-35
  - Stop SCTE-35
- 5. **Logo slot** you can set one common logo for a selected group of elements
- Export to file you can save the selected part of a schedule to an *.xml file as an independent schedule. This option is only available to a group of elements selected with Shift

All of the actions above are available in both Schedule and Playlist modes.

Playlist-specific is the **Set loop area for selected items** function. This function is only available to a group of elements selected with Shift. The playback of the selected playlist fragment will be looped, the loop count can be set in the drop-down list:



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, AirX Channel [New channel 2] OnAir: Pl	aylist			
Show OnAir Edit Show columns				
Type   CC   🋕   🔛	🖵 I 🗘	Scale   Duration	Name	
1 2	🖂 r*	00:00:20:12	19746.mp4	
	$\mathbf{x}$	00:00:20:12	Pepsi.mp4	
1 2		Remove loop area		Baking.mp4
1 2		Set single loop for s	elected item	r drop.mp4
1 2		Set loop count as in		min_v2.mp4
1 2	2 ل 🖾	Set loop count		ch Light 4K
1 2		00:00:20:01	Pacifica Calif	ornia

Figure 342. Loop area drop-down list

In addition to the actions of the context menu listed above, the group addition of CG scenes is also available.

AirX Channel Source [New channel]	AirX Channel [New channel]	OnAir: Schedule		
♥ 🗉 Channel resources	Show OnAir Edit Show	columns		
😭 Live	Type   CC   ⚠́		]  Scale Duration	Name
🔉 👑 Scene	1 2		00:00:30:01	Aerial Drone
📮 Logo	1 2		00:00:20:12	Macro Match Light 4K
🕀 Web URL	1 2		00:00:20:01	Pacifica California
▶ ↓ Events	12		00:00:20:01	Speakeasy Drink Creation
▶ ↓ Plugins	1 2		00:00:30:00	DoYouKnow_2min_v2
Source content browser			00:00:20:12	Out of town Aerial Drone
Type Name			00:00:20:12	Pacifica California
Row_Artist	Item's Scenes			1 📮 📮 Item's output
🛅 Info	Layer Offset start time	Offset end time	Duration Nan	
	00:00:00:00	00:00:20:12	00:00:12:02 Nov	v_Artist 1
Rall_cra Drag'n'Dro				2
Name_Age_Smoking	3			3

Figure 343. The group addition of CG scenes

CG scenes can be added from the Source content browser tab of the **Scene** branch of the Channel resource tree.

In case of multiple selections, the parameters of the added CG scene will be identical for all selected schedule rows. You should pay attention to the **Duration** and **Offset time** parameters of the selected CG scene to avoid mistakes in the schedule.

And finally, the group addition of external control events is also available for selected schedule rows:



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AirX Channel Source [New channel]	AirX Channel [Ne	w channel] (	DnAir: Scheo	lule					
♥ 🕒 Channel resources	Show OnAir E	lit Show	columns						
🙀 Live	Type	τιά	1 🔤 1	🖵 I 🕻	]  Scale	Duration	Name		In
Scene	1					00:02:03:17	Pacifica California		00:00:00:00
📑 Logo						00:00:30:01	Aerial Drone		00:00:00:00
🌐 Web URL		<u>ب</u>				00:00:20:12	Macro Match Ligh	t 4K	00:00:00:00
♥ 🎝 Events						00:00:20:01	Pacifica California		00:00:00:00
🗘 Input		Ĺ Ĺ				00:00:20:01	Speakeasy Drink C	reation	00:00:00:00
🗘 Output						00:00:30:00	DoYouKnow_2mir	_v2	00:00:00:00
♥		<u>Ļ</u>				00:00:20:12	Out of town Aeria	l Drone	00:00:00:00
🛇 🗘 Kramer P2000						00:00:20:12	Pacifica California		00:00:00:00
🗘 Output	1	2		× (1		00:00:20:01	Macro Match Ligh	t 4K	00:00:00:00
Source content browser 4	🃮 Item's outpu								
Type Name	# Offset st	art time	Offset en	d time	Name		Program ID	Avail num	Avail expect
© SCTE Start	1 00:00:2	0:12	00:00:00	0:00	SCTE St	art			255
Gur SCTE Stop	rag'n'Dr	on							
	ray n'Dr	oh							

Figure 344. The group addition of external control events

Please pay attention to the **Duration** and **Offset time** parameters of the selected external event that will be identical for all selected schedule rows.

# **Table of codecs**

	AVI	MOV/MP	4 MXF	TimeShift	Software /
VIDEO	23,97/	) /HD/UHD, 24/25/50/ /60 FPS	29		Hardware
H.264 4:2:0	V	V	V	-	SW/HW
MPEG-2 4:2:0	V	V	V	-	SW
H.265 (HEVC) 4:2:1	V	V	V	-	SW/HW
MPEG-2 I-Frame 4:2:0	V	V	V	+	SW
DVCAM 4:2:0	V	V	V	+	SW
DVCPro 4:1:1	V	V	V	+	SW
DVCPro50 4:2:2	V	V	V	+	SW
DVCPro HD 4:2:2	V	V	V	+	SW
MPEG IMX 30 4:2:2	V	V	V	+	SW
MPEG IMX 40 4:2:2	V	V	V	+	SW
MPEG IMX 50 4:2:2	V	V	V	+	SW
DNxHD 120 4:2:2	V	V	V	+	SW
DNxHD 185 4:2:3	V	V	V	+	SW
AppleProRes HD HQ 4:2:2/10bit	V	V	V	+	SW
AppleProRes HD LT 4:2:2/10bit	V	V	V	+	SW
AppleProRes HD Proxy 4:2:2/10bit	V	V	V	+	SW
AppleProRes HD NQ 4:2:2/10bit	V	V	V	+	SW
AppleProRes SD HQ 4:2:2/10bit	V	V	V	+	SW



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					_
AppleProRes SD LT 4:2:2/10bit	V	V	V	+	SW
AppleProRes SD Proxy 4:2:2/10bit	V	V	V	+	SW
AppleProRes HD NQ 4:2:2/10bit	V	V	V	+	SW
XDCAM HD 17 4:2:0	V	V	V	_	SW
XDCAM HD 25 4:2:0	V	V	V	-	SW
XDCAM HD 35 4:2:0	V	V	V	_	SW
XDCAM EX 35 4:2:0	V	V	V	_	SW
XDCAM HD 50 4:2:2	V	V	V	_	SW
AVC Intra 50 4:2:0/10bit	V	V	V	+	SW
AVC Intra 100 4:2:2/10bit	V	V	V	+	SW
AVC Intra 200 4:2:2/10bit	V	V	V	+	SW
XAVC Intra 300 4K 4:2:2/10bit	V	V	V	+	SW
H264 4:4:4 I-Frame	V	V	V	+	SW/HW
HEVC 4:4:4 8Bit I- Frame	V	V	V	+	SW/HW
HEVC 4:4:4 10Bit I- Frame	V	V	V	+	SW/HW
DNxHR SQ (4:2:2 8Bit)	V	V	V	+	SW
DNxHR HQ (4:2:2 8Bit)	V	V	V	+	SW
DNxHR HQX (4:2:2 10Bit)	V	V	V	+	SW
DNxHR 444 (4:4:4 10Bit)	V	V	V	+	SW
ProRes UHD (Progressive 2160P) 4:2:2 10Bit HQ	V	V	V	+	SW
ProRes UHD (Progressive 2160P) 4:2:2 10Bit LT	V	V	V	+	SW
ProRes UHD (Progressive 2160P) 4:2:2 10Bit Proxy	V	V	V	+	SW
ProRes UHD (Progressive 2160P) 4:2:2 10Bit NQ	V	V	V	+	SW

Table 3. Table of codecs