USER'S MANUAL
ENGLISH

MSMP
MESSAGE SCHEDULER-STREAMER MUSIC PLAYER
LDMSMP

CONTENTS

ENGLISH

INFORMATION ON THIS USER MANUAL 3

INTENDED USE 3

DEFINITIONS AND SYMBOL EXPLANATIONS 3

SAFETY INSTRUCTIONS 4
ATTENTION: HIGH-VOLUME AUDIO PRODUCTS! 6

INSTRUCTIONS FOR INDOOR INSTALLATION EQUIPMENT 6

1. PACKAGING CONTENT 7

2. FEATURES 7
2.1 THE MOST IMPORTANT FEATURES 7

3. INSTALLING AND CONNECTING 8
3.1 INSTALLATION, ASSEMBLY, AND VENTILATION 8
3.2 CONNECTING TO THE MAINS SUPPLY AND SWITCHING ON THE DEVICE 8
3.3 AUDIO OUTPUT CONNECTIONS 8
3.4 ETHERNET PORT FOR CONFIGURATION AND INTERNET CONNECTION 8
3.5 WI-FI INTERFACE FOR CONFIGURATION AND INTERNET CONNECTION 8
3.6 GPI PORTS FOR REMOTE CONTROL 8

4. SET-UP AND OPERATION 9
4.1 FACTORY SETTINGS / FIRMWARE UPDATE 9

5. CONNECTIONS AND OPERATING/DISPLAY ELEMENTS 10
5.1 FRONT 10
5.2 BACK 11

6. TECHNICAL INFORMATION 11
6.1 TECHNICAL SPECIFICATIONS 11
6.2 DIMENSIONS 13
6.3 UNDER-TABLE/TABLETOP MOUNTING 14

7. WEB GUI 14
7.1 THE FIRST STEPS 15
7.2 DEVICE 17
7.3 NETWORK 50
7.4 SYSTEM 58
7.4.3 BACKUP, RESTORE, AND FIRMWARE 60
7.5 CONFIGURATION OF AN SSH SERVER FOR STORE AND FORWARD (RSYNC) 66

8. CARE, MAINTENANCE, AND REPAIR 74
CARE (CARRIED OUT BY USER) 74
MAINTENANCE AND REPAIR (BY QUALIFIED PERSONNEL ONLY) 74

9. DISPOSAL 75

10. MANUFACTURER'S WARRANTY 75
MANUFACTURER'S WARRANTY AND LIMITATION OF LIABILITY 75
CE CONFORMITY 75
EU DECLARATION OF CONFORMITY 75

ENGLISH

YOU HAVE MADE THE RIGHT CHOICE!
This device has been developed and manufactured to the highest standards of quality to ensure many years of trouble-free operation. This is what the name LD Systems stands for as well as its long-standing experience as a manufacturer of high-quality audio products. Please read the user manual carefully to get the most out your new LD systems product.
You can find more information on **LD Systems** on our website WWW.**LD-SYSTEMS**.COM

INFORMATION ON THIS USER MANUAL

- Carefully read the safety instructions and the entire manual before operating the device.
- Observe the warnings on the device and in the user manual.
- Always keep the user manual within reach.
- If you sell or pass on the device, it is important that you also include this user manual, as it is an integral part of the product.

INTENDED USE

The product is a device for professional audio installation!
The product has been developed for professional use in the field of audio installation and is not intended for household use!
Furthermore, this product is intended for installation by qualified personnel with specialist knowledge and for operation by properly trained persons!
Use of the product that is not in accordance with the specified technical data and operating conditions is considered improper use!
Liability is exempted when damage and third-party damage to persons and property is caused by inappropriate use!
The product is not suitable for:
– Use by persons (including children) with limited physical, sensory, or mental abilities or lack of experience and knowledge.
– Children (children must be instructed not to play with the device).

DEFINITIONS AND SYMBOL EXPLANATIONS

1. **DANGER:** The word DANGER, possibly in combination with a symbol, indicates immediately hazardous situations or conditions risking life and limb.
2. **WARNING:** The word WARNING, possibly in combination with a symbol, indicates potentially hazardous situations or conditions risking life and limb.
3. **CAUTION:** The word CAUTION, possibly in combination with a symbol, indicates situations or conditions that may lead to injury.
4. **ATTENTION:** The word ATTENTION, possibly in combination with a symbol, indicates situations or conditions that may lead to damage to property and/or the environment.

This symbol identifies hazards that can cause electric shock.

This symbol indicates hazardous areas or hazardous situations.

This symbol indicates hazards caused by hot surfaces.

This symbol indicates hazards due to high volume levels.

This symbol indicates additional information on the operation of the product.

This symbol denotes a device that does not contain any user-serviceable parts.

This symbol indicates a device that may only be used in dry rooms.

SAFETY INSTRUCTIONS

DANGER:

1. Do not open the device, and do not make any modifications to it.
2. If your device no longer functions properly, if liquids or objects get inside it, or if it has been damaged in any other way, switch it off immediately and disconnect it from the power supply. This device may be repaired only by authorised repair technicians.
3. For devices of protection class 1, the protective conductor must be connected correctly. Never disconnect the protective conductor. Devices of protection class 2 do not have a protective conductor.
4. Ensure that live cables are not kinked or otherwise mechanically damaged.
5. Never bypass the device fuse.

WARNING:

1. The device may not be operated if it shows obvious signs of damage.
2. The device may only be installed in a voltage-free state.
3. If the mains cable of the device is damaged, the device must not be used.
4. Permanently attached mains cables may only be replaced by a qualified person.

ATTENTION:

1. Do not operate the device if it has been exposed to large temperature fluctuations (for example, after transport). Moisture and condensation can damage the device. Switch on the device only when it has reached ambient temperature.
2. Make sure that the voltage and frequency of the mains correspond to the values specified on the device. If the device has a voltage selector switch, do not turn the device on until it has been set correctly. Use only suitable mains cables.
3. To disconnect the device from the mains on all poles, it is not sufficient to press the on/off switch on the device.
4. Make sure that the fuse used corresponds to the type printed on the device.
5. Ensure that suitable measures have been taken against overvoltage (e.g. lightning strikes).
6. Observe the specified maximum output current on devices with a Power Out connection. Ensure that the total current consumption of all connected devices does not exceed the specified value.
7. Replace plug-in mains cables with original cables only.

DANGER:

1. Danger of suffocation/choking! Plastic bags and small parts must be kept out of reach of persons (including children) with reduced physical, sensory, or mental capabilities.
2. Danger caused by falling device! Make sure that the device is securely installed and cannot fall down. Only use suitable stands or mounts (particularly for fixed installations). Ensure that accessories are properly installed and secured. Ensure that all applicable safety regulations are observed.

WARNING:

1. Use the device in the prescribed manner only.
2. Operate the device only with the accessories recommended and intended by the manufacturer.
3. Observe safety regulations applicable in your country during installation.
4. After connecting the device, ensure that all cables are routed so as to avoid damage or accidents, such as from tripping.
5. Always observe the specified minimum distance to normally flammable materials! Unless explicitly stated, the minimum distance is 0.3 m.

CAUTION:

1. Moving components such as mounting brackets pose a jamming hazard.
2. In the case of devices with motor-driven components, there is a risk of injury due to the movement of the device. Sudden movement of the device can cause electric shock.

ATTENTION:

1. Do not install or use the device in the vicinity of radiators, heat accumulators, furnaces, or other heat sources. Ensure that the device is always installed in such a way that it is sufficiently cooled and cannot overheat.
2. Do not place any ignition sources such as burning candles near the device.
3. Ventilation openings must not be covered, and fans must not be blocked.
4. For transport, use the original packaging or packaging provided by the manufacturer.
5. Avoid any impacts to or shaking of the device.
6. Observe the IP rating and the ambient conditions such as temperature and humidity according to the specifications.
7. Devices can be continuously further developed. In the event of deviating information on operating conditions, performance, or other device properties between the user manual and the device labelling, the information on the device always takes priority.
8. The device is not suitable for tropical climate zones or for operation over 2,000 m above sea level.

CAUTION: Connecting signal cables can cause significant interference noise. Make sure that devices connected to the output are muted while making connections. Otherwise, noise levels may cause damage.

ATTENTION: HIGH-VOLUME AUDIO PRODUCTS!
This device is designed for professional use. The commercial operation of this device is subject to the applicable national regulations and guidelines for accident prevention.
Hearing damage due to high volume and continuous exposure: use of this product may generate high sound pressure levels (SPLs) that may cause hearing damage.
Avoid exposure to high volumes.

INSTRUCTIONS FOR INDOOR INSTALLATION EQUIPMENT

1. Devices for installation applications are designed for continuous operation.
2. Devices for indoor installation are not weather-resistant.
3. Surfaces and plastic parts can age even in installation equipment, e.g. due to UV radiation and temperature fluctuations. This generally does not impair functionality.
4. With permanently installed devices, the accumulation of impurities, e.g. dust, is to be expected. Always observe the care instructions.
5. Unless explicitly stated otherwise on the device, the devices are intended for installation heights of less than 5 m.

1. PACKAGING CONTENT

Remove the product from the packaging and remove all packaging material.
Please check the completeness and integrity of the delivery and notify your distribution partner immediately after purchase if the delivery is not complete or if it is damaged.
The packaging content for the product includes:

- 1× MSMP audio player
- 1× mains adapter
- 1 set of terminal blocks
- 4× rubber foot (pre-assembled)
- 1× mounting set for under-table or tabletop mounting
- Safety and compliance information (user manual as a download via QR code)

2. FEATURES

MSMP is a stereo audio player in compact design for the playback of music content from local storage media (USB/MicroSD), Internet streaming (online radios, etc.), and for exchanging digital media (DLNA, Airplay), which is characterised by by the following main features.

2.1 THE MOST IMPORTANT FEATURES

- 1 unbalanced audio stereo output, RCA, and mini-jack connection (selection of stereo/mono for the output)
- Compatible with MP3, ogg, WAV, AIFF, and FLAC audio formats
- A USB port and a MicroSD card slot for accessing locally stored content
- Ethernet interface with RJ45 connection for communication with the configuration web application and for receiving Internet streaming
- Wi-Fi interface (client or master mode) for communication with the configuration web application and for receiving Internet streaming
- Fully configurable via the web application (point-to-point or via the same local area network (LAN))
- 2 general purpose input (GPI) ports for initiating the two events available
- Event initiated by silence detection
- Internal clock with up to 240-hour power reserve (without power supply connection), which automatically synchronises with the NTP services.
- Modular firmware: The MSMP has a firmware with modular services that allows each user to individually configure the functionality and adapt it to their specific project or business model. The firmware includes, among other things:
  - Calendar-based event initiation.
  - Synchronisation of content stored on the cloud (Cloud Disk Sync): Store and Forward (rsync).
  - Execution of "scripts" (instruction files written by the user, programming language LUA – www.lua.org).
  - Encryption of local files (USB/MicroSD).
  - Activity recording.

Controllable via QUESTRA® design & management software for network-based LD Systems installation solutions. **www.ld-systems.com/questra**

The MSMP is configured via the web application embedded in the device.
You can find more information on this in the MSMP web application manual.

3. INSTALLING AND CONNECTING

3.1 INSTALLATION, ASSEMBLY, AND VENTILATION

The MSMP has been specially developed so that it can be used both as a desktop unit and for installation in a 19" rack, filling a third of a rack unit (LDTICARK rack shelf for standard rack cabinets optionally available).
In professional systems, it should preferably be installed in the same rack as the audio sources. Ventilation is not necessary due to the very low consumption. However, care must be taken to ensure that it is not exposed to extremely high temperatures and that the environment is as dry and dust-free as possible.

3.2 CONNECTING TO THE MAINS SUPPLY AND SWITCHING ON THE DEVICE

The MSMP is supplied with DC voltage via its external mains adapter: mains adapter 100–240 VAC and 50–60 Hz. This mains adapter is equipped with various interchangeable connectors, suitable for the American, European, British, and Chinese systems. The working environment must be dry and completely dust-free. The device must not be exposed to water or splashes of water. Do not place any containers with liquids or naked flames, such as candles, on the device. If any intervention and/or switching on/off of the device is necessary, the device must always be disconnected from the mains beforehand.
There are no elements inside the device that may be manipulated by the user. To avoid unwanted humming noises, the mains cable must be prevented from coming into contact with the shielded audio cables that transport the signal.

3.3 AUDIO OUTPUT CONNECTIONS

The MSMP has 1 unbalanced stereo output on its rear panel. The signal output sockets are of the type 2 × RCA and 1 × 3.5 mm stereo mini jack.

3.4 ETHERNET PORT FOR CONFIGURATION AND INTERNET CONNECTION

An RJ-45 socket allows the device to be connected to an Ethernet network or directly (point-to-point) to a computer. This connection makes it possible to access content on the Internet and to configure the device using a web browser installed on the computer, which accesses the IP address of the MSMP, making the web application embedded in the device visible. You can find more information on this in the MSMP web application manual.

3.5 WI-FI INTERFACE FOR CONFIGURATION AND INTERNET CONNECTION

A Wi-Fi interface allows the device to be connected to a Wi-Fi network or directly (point-to-point) to a computer via Wi-Fi. This connection makes it possible to access content on the Internet and to configure the device using a web browser installed on the computer, which accesses the IP address of the MSMP, making the web application embedded in the device visible. You can find more information on this in the MSMP web application manual.

3.6 GPI PORTS FOR REMOTE CONTROL

The MSMP has 2 GPI inputs on the back for control. These inputs can be connected to an external device (e.g. contact closure) and assigned to a function of the MSMP:

- Loading and playback of previously configured audio content
- Access of a preset
- Playback of audio content with priority via the music programme
- Control via the transport bar (PLAY/PAUSE, STOP, etc.)
- Internal initiation for interaction with other player services (e.g. scripts)

The GPI connections are designed as a screw-on terminal strip with three contacts (Euroblock).
The connections are assigned as follows:
GPI pin: Pin 1 and 2
Ground: Pin C

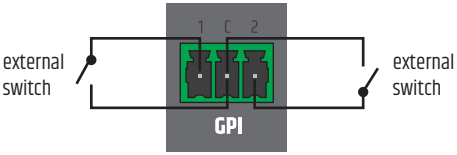


Illustration: Example for the connection of GPI 2

The connection cables can be up to approx. 500 metres in length if a cross-section of at least 0.5 mm² is used.

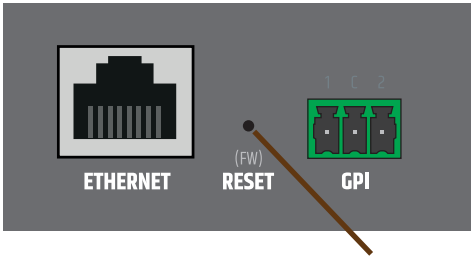
4. SET-UP AND OPERATION

The MSMP has been designed so that it can be used as a playback device for local storage media without prior configuration. However, it is advisable to configure the MSMP with the web application in order to fully utilise all of its functions. Please consult the MSMP web application manual to get an idea of the full range of services.
To switch on the device, connect the mains adapter to the back of the device.

Please check the firmware version of your device. To ensure that all the features mentioned in this manual are available, the firmware must be up to date. You can download the versions at www.**LD-Systems.com**.

4.1 FACTORY SETTINGS / FIRMWARE UPDATE

They can also be carried out using the RESET / FW button on the back of the MSMP:

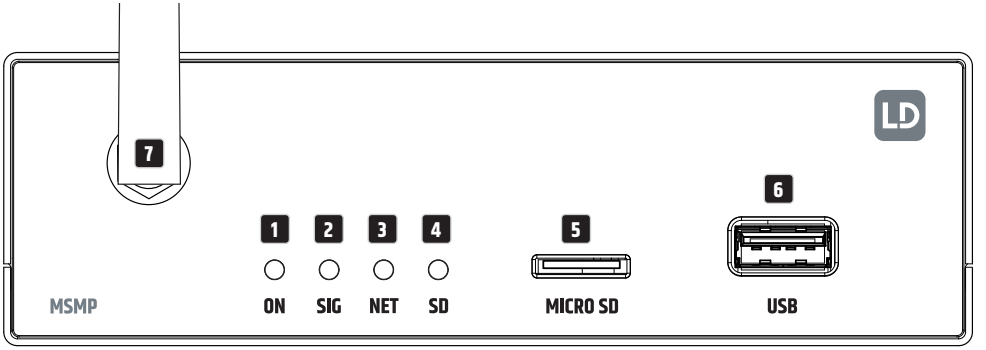


- **Factory setting:** Press the RESET / FW button on the back of the device and hold it down for 10 seconds, e.g. with a paper clip, while the device is switched on.
- **Fail Safe (restoring the firmware):** You can install the latest firmware published on the LD Systems website or a firmware file saved on one of the local storage systems (USB/MICRO SD). While the device is unplugged, press and hold the RESET / FW button with a small pen or paper clip and then plug the device in. The LEDs on the front start to flash rapidly for 3 seconds (at this point the RESET / FW button can be released).

To restore the latest released firmware, the device must be connected to a DHCP server with Internet access to download the firmware. If this procedure is not carried out properly, the device's entire configuration with all parameters may be lost. **As such, make sure to have a backup copy of the device before carrying out this action.**

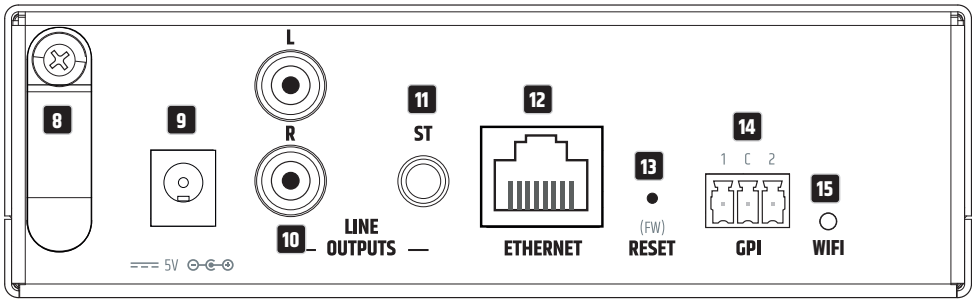
5. CONNECTIONS AND OPERATING/DISPLAY ELEMENTS

5.1 FRONT



1 **LED ON:** Power LED**.**
2 **LED SIG:** Signal presence indicator**.**
3 **NET LED:** Shows data reception via the network (Internet).
4 **LED SD** Operation of the Micro SD source.
5 **MICROSD/SDHC SLOT:** For playing local audio content up to 2TB, FAT16/32, and NTFS format.
6 **USB 2.0 PORT:** For playing local audio content up to 2TB, format FAT16/32, and NTFS.
7 **WI-FI ANTENNA.**

5.2 BACK



8 Strain relief for the power supply cable
9 Connection for the external mains adapter
10 Stereo output 2 × RCA
11 Stereo output 3.5 mm mini jack
12 Ethernet connection
13 Reset button / firmware button
14 GPI port
15 WI-FI LED

6. TECHNICAL INFORMATION

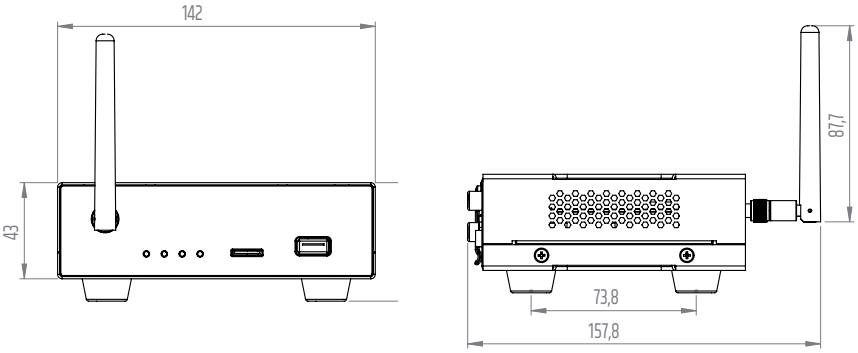
6.1 TECHNICAL SPECIFICATIONS

Item number	LDMSMP
Product type	Installation media player source
No. of outputs	2
Output type	Unbalanced stereo line signal
Cooling system	Convection cooling
Media player	
Audio modes	Player for local storage media (USB and microSD), URL radio streaming, AirPlay, DLNA
Media formats	Mp3, ogg, wav, flac, aiff, m3u, pls
Resolution	16 bit
Sampling rate	48 kHz
Bit rate	32–320 kbps
Dynamic range	From -80 dB to 0 dB
Real-time clock	
Holding time	Approx. 240 hours
Accuracy	±1 minute / month

Item number	LDMSMP
Line output	
Outputs:	Unbalanced stereo line level
Number of output connectors	2
Type of connector	RCA stereo, mini jack 3.5 mm
Max. output level	6 dBV / 5k ohm
Output impedance	460 Ohm
Max. THD+N	0.06% @ 1 kHz
Frequency response	18 Hz–18 kHz (-3 dB)
Max. output noise level	-105 dBu / A-weighted
Dynamic range	To be added
Crosstalk	To be added
Network connection	
Plug connector (wired)	RJ45
Speed	10/100Mbps
Wireless	Wi-Fi 802.11b/g/n (2.4GHz band)
WLAN security	EPA
Wi-Fi antenna	Front panel
Programming and control	Web Application, QUESTRA®. Third-party integration: JSON
GPI remote control	
GPI type	Potential-free contact to earth
Number of GPI ports	2
Type of connector	3-pole terminal strip
Local memory	
Local storage ports	1 Micro SD SDXC, 1 USB
USB type	USB 2.0 High Speed socket (480 Mbps)
USB storage capacity	Up to 2 TB
Compatible file systems	FAT16, FAT 32, VFAT, and NTFS (write-protected) Multiple partitions up to 1
Folder hierarchy	Up to 8 which contain the root directory
File sorting	UNICODE Up to 100 folders, 100 files per folder (folders/files over 100 sorted in FAT order)
Power supply	
Type	External switched-mode power supply (SMPS)
Operating voltage	100 V AC–240 V AC (+/-10%), 50–60 Hz
Plug for power supply	International AC plug set

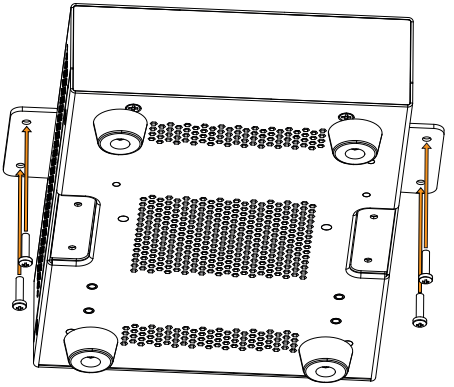
Item number	LDMSMP
Secondary power supply	5VDC
Max. power consumption	4.5 VA / 2.2 W
General	
Housing material	Steel
Front panel material	Plastic
LED displays	Front: NET, SP, SD, Power; Rear: Wi-Fi
Buttons	Rear: Factory reset / recessed button (pin hole)
Dimensions (W × H × D)	142 × 53 × 124.2 mm (height with rubber feet)
Rack height	1 U
Rack width	1/3 19"
Weight	0.9 kg
Operating temperature	0°C–35°C
Max. humidity for operation	<80% (non-condensing)
Accessories included	External mains adapter with interchangeable plugs, mounting plates for surface mounting, Wi-Fi antenna, rubber feet
Optional accessories	Rack hardware (LDTICARK)

6.2 DIMENSIONS

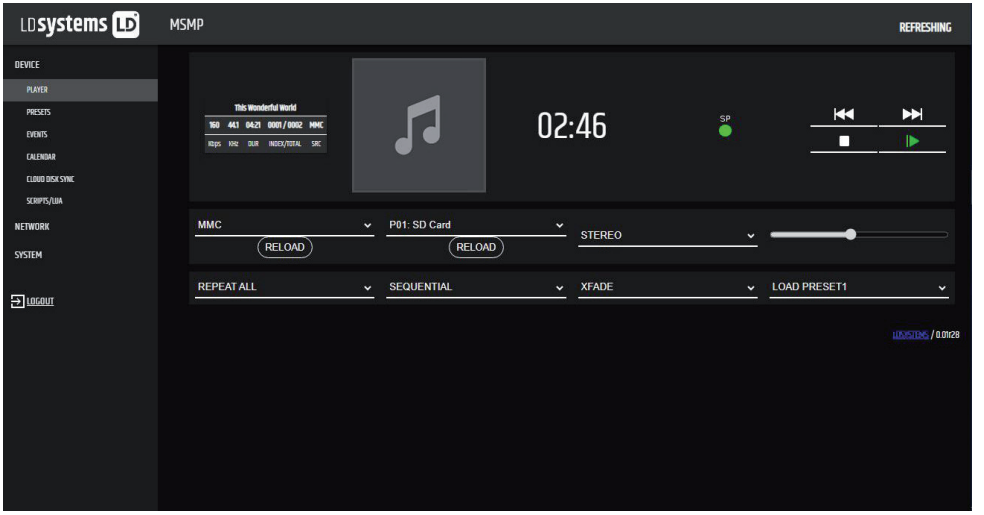


6.3 UNDER-TABLE/TABLETOP MOUNTING

There are two recesses on the top and bottom of the housing, each with two M3 threaded holes, for under-table/tabletop mounting. Attach the two included mounting plates to the top or bottom using the included M3 countersunk screws. Now the device can be mounted in the desired position (see illustration, mounting screws not included). For tabletop mounting, the four rubber feet must be removed beforehand.



7. WEB GUI



The MSMP has an embedded web application for configuration, eliminating the need for additional software installation. This application can be used to configure advanced device options, create playlists, program calendar events, create scripts, and remotely operate basic functions. This application can be accessed using a web browser from any device that is connected to the same local network via Ethernet (cable) or Wi-Fi.

7.1 THE FIRST STEPS

To access the MSMP web application, the device must be connected either wirelessly (Wi-Fi) or to the network via cable (RJ-45 port).

- **Cable (Ethernet connection):** The MSMP is standard configured in DHCP mode, i.e. an IP address is automatically assigned.
  - Make sure that the network parameters with static IP are compatible with your local network and with the IP range available in your system.

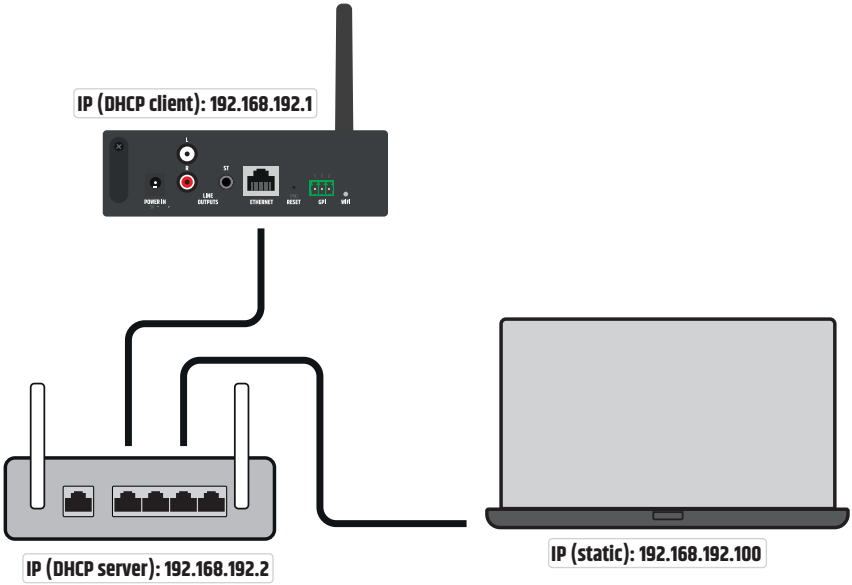


Illustration: Example of connection to a local network via Ethernet interface (cable)

- **Wi-Fi:** The MSMP has a Wi-Fi network interface for receiving audio streaming content transmitted from mobile devices and for the device's wireless configuration. There are two modes of operation:
  - **MASTER mode:** Point-to-point connection; the device's Wi-Fi network interface is standard configured in this operating mode. Connect your Wi-Fi device (computer, smartphone, etc.) via your Wi-Fi network wizard as a client of the device (connection to the PLAYER-WIFI- network, SSID by default). The default password is: **LDPlayerAP**.

    In this operating mode, you have no connection to the Internet. However, it is useful for opening the web application for the first time and configuring the network parameters as required.

  - **CLIENT mode:** This connection mode allows the device to connect to your preferred Wi-Fi network. To be able to configure the MSMP, all mobile devices must be connected to the same network. If your Wi-Fi network is connected to the Internet, both the MSMP device and all mobile devices have access to the Internet.

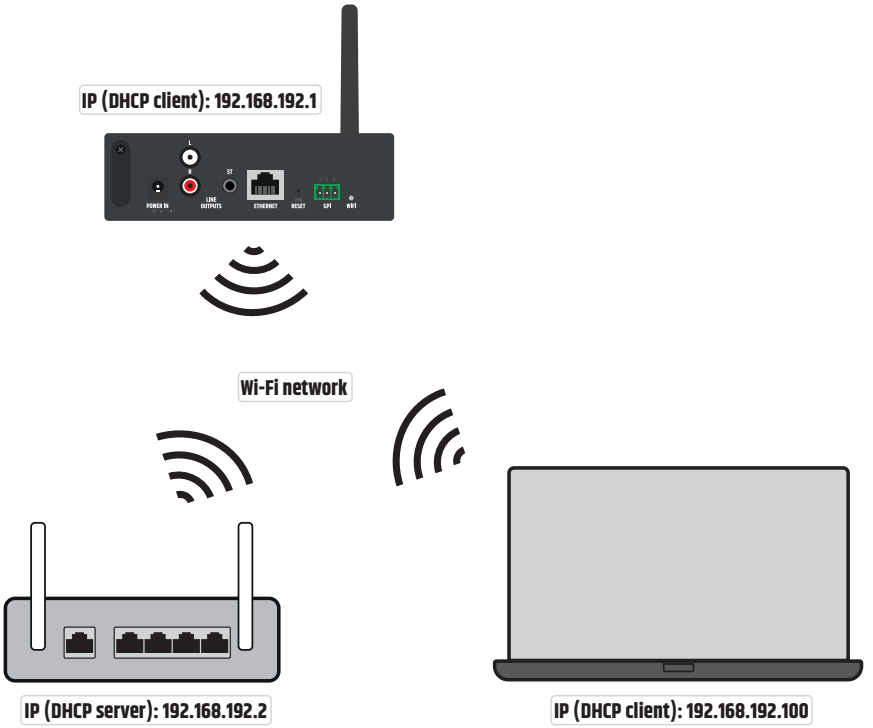


Illustration: Example of connection to a local network via Wi-Fi network interface (wireless)

The MSMP uses mDNS technology to enable intuitive access to it via a web browser in the same local network (LAN). To do this, enter **"msmp.local/"** in the search bar of your browser as standard.

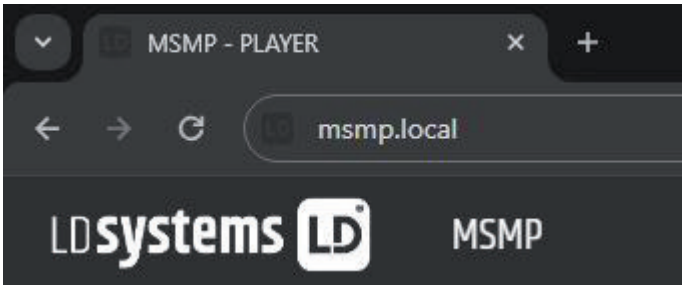


Illustration: Access via mDNS service

As another option, you can also gain access via the IP assigned to the MSMP if you prefer (or if no mDNS service is available). The IP address can be found on the sticker on the bottom of the device. Alternatively, you can find out the IP address via the DHCP server's web GUI (switch/router). The relevant information can be found in the manufacturer's documentation.

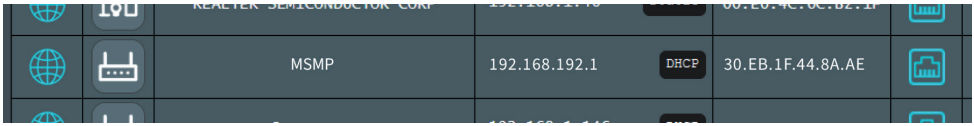


Illustration: Example Web GUI Router

Enter the device's IP address in your browser's navigation bar (the IP address shown in Figure 5 does not have to be the same as the IP address assigned to your device).
The welcome screen appears. To access the application, please use the following (default) username (username) and the following (default) password (password):
Username: root
Password: ldsystems

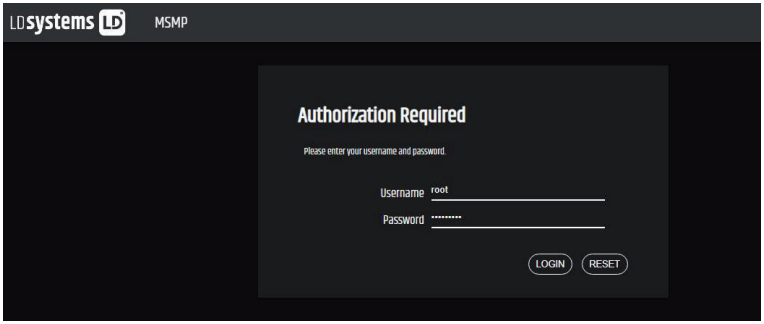


Illustration: Web application's welcome screen

7.1.1 QUICK GUIDE FOR CONNECTION VIA ETHERNET

- Connect the MSMP to a switch/router via the Ethernet interface (cable).
- Now connect the computer or smart device to the same network.
- Enter the identifier **"msmp.local/"** for the MSMP in your browser.

7.1.2 QUICK GUIDE FOR CONNECTION VIA WI-FI

- Connect the computer or smart device to the MSMP Wi-Fi network.
  Password: **LDPlayerAP**
- Enter the identifier **"msmp.local/"** for the MSMP in your browser.

7.2 DEVICE

7.2.1 PLAYER

This menu page provides information on playback as well as tags for streaming and detailed information on the audio content, including the respective cover. In addition, the basic functions **PLAY/PAUSE, STOP, PREV**, and **NEXT**; source selection and user presets; repeat, playback, and fade modes; channel selection (stereo/mono), volume control, and restart mode can be controlled by remote control. Useful information, such as the firmware version, is also provided at the bottom of the page.

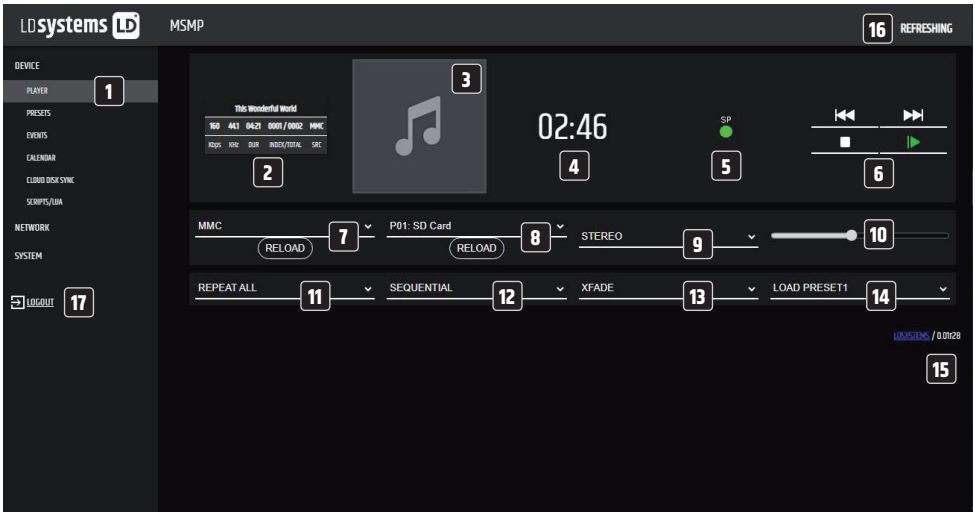


Illustration: Playback page (player)

1 NAVIGATION MENU:
Display of the various navigation menus and sub-menus of the web application.

2 STREAMING DATA:
Information about the stream or audio file (depending on the configuration). If no data is available, the default value is displayed, i.e. the URL address.

- Tags ID3: Title, Artist, Album ...
- kbps: Bitrate/s
- kHz: Sampling rate
- DUR: Duration
- INDEX/TOTAL: Index or position within all files
- SRC: Source (USB, MMC, NET...)

3 COVER OF THE FILE:
Display of the cover of the respective file. The device must be connected to the Internet for the cover to be displayed correctly. If it is not possible to display the cover, a standard image will appear.

4 PLAYBACK TIME:
The time elapsed since the start of playback of the URL or audio file is displayed.

5 SIGNAL PRESENT SP:
Lights up when the output of the device is receiving an audio signal. If no audio content is being played or the playback volume is very low or the device is muted ("**mute**"), this display appears in white.
The green SIG LED on the front of the device also roughly indicates the level of the audio signal (quiet signal: LED lights up dimly / loud signal: LED lights up brightly). This is helpful for solving problems in the case of no audio signal.

6 PLAYBACK CONTROL:
Used for remote control of the device: previous**(PREV**), next**(NEXT**),**stop (STOP**), play/pause**(PLAY/PAUSE**).

7 SOURCES:
Used to select one of the available sources. The **RELOAD** button can be used to reload the current source.

8 PRESETS:
Used to select one of the available presets. The **RELOAD** button can be used to reload the current preset. If changes are made to the current preset, it must be reloaded for the changes to be applied.

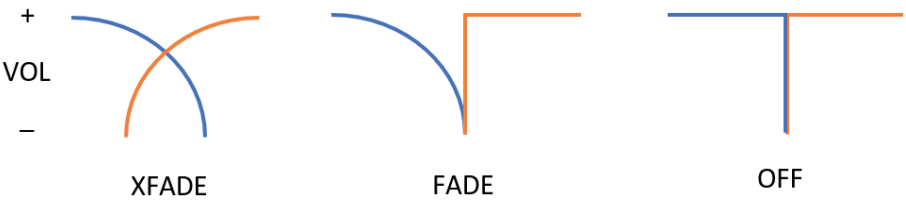
9 STEREO MONO:
Setting the output to stereo (left and right channel) or mono (the same signal is present on the left and right).

10 VOLUME:
Remote control of the volume.

11 REPEAT MODE:
- **PLAY ALL**: All playlist content is played once.
- **PLAY ONE**: Only the first track in the playlist is played.
- **REPEAT ALL**: All playlist content is repeated in a loop.
- **REPEAT ONE**: Only the first track in the playlist is repeated.

12 PLAYBACK MODE:
- **SEQUENTIAL**: The playlist content is played in alphanumeric order.
- **RANDOM**: The playlist content is played in random order.

13 TRANSITION MODE between audio files:
- **XFADE**: The currently playing file becomes quieter towards the end of playback as the volume of the next track increases. There is a smooth transition from one file to the next (approx. 5 seconds), with overlaps between the tracks.
- **FADE**: The currently playing file becomes quieter towards the end of playback (approx. 2.5 seconds). There is a smooth transition from one file to the next, but there is no overlap between the tracks.
- **OFF**: Deactivated. The transition from one file to the next is abrupt, and there is neither attenuation nor overlapping between the individual audio files.



ATTENTION: If a file of short duration is to be played (e.g. a ringtone of 2–3 seconds) and the transition mode **XFADE** is combined with the repeat mode **REPEAT** ONE/ALL, special attention must be paid to the playback times of the files and transitions, as unexpected behaviour could occur.

14 RESTART MODE:

- **KEEP STATUS**: The playback status is retained when the device is restarted: source, preset, playback**(-PLAY**, **STOP**...), repeat mode, etc.
- **LOAD PRESET 1**: Preset 1 is automatically loaded when the device is restarted.

15 INFORMATION:

The following relevant information is displayed here:

- Device's firmware version

16 SCREEN REFRESH:

The screen refresh can be paused here (SP, playback duration, file information, etc.).
The number of changes made before saving a configuration is also displayed.

17 LOGOUT:

Logging out of the web application and relaying to the welcome screen.

7.2.2 PRESETS

Up to 20 presets or user configurations can be created in the MSMP. If a preset saved in the device is accessed later, all the settings saved in it are restored.

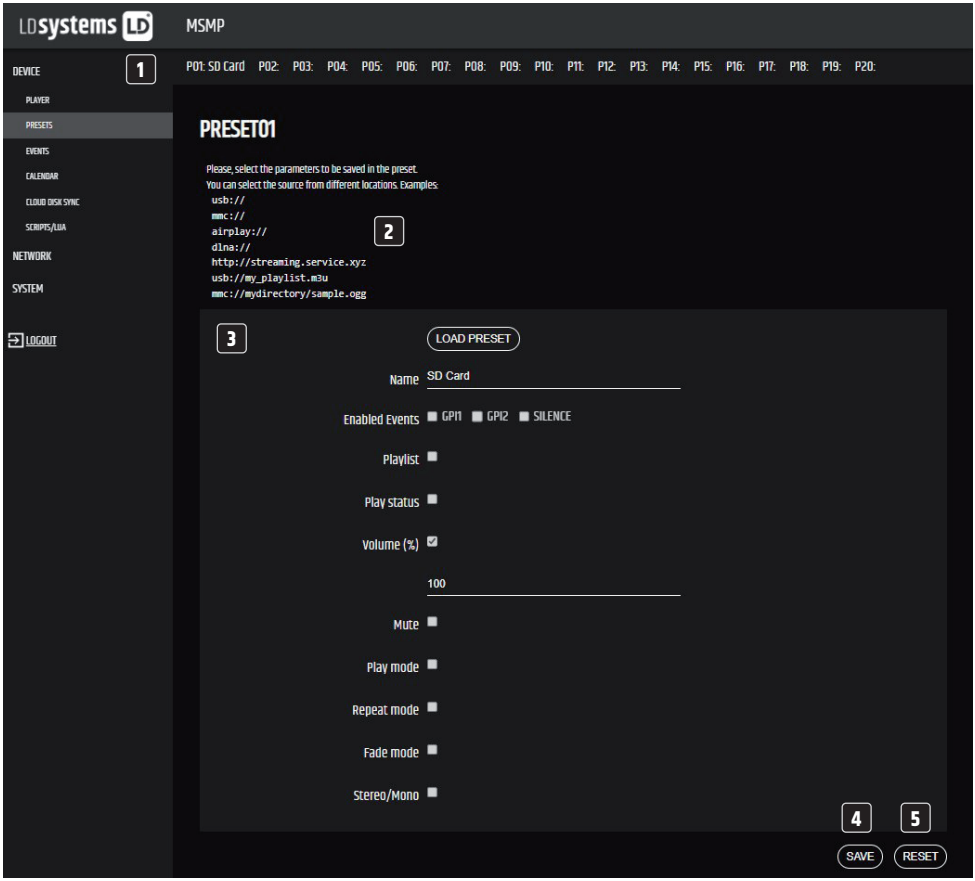


Illustration: Example of the configuration of a preset

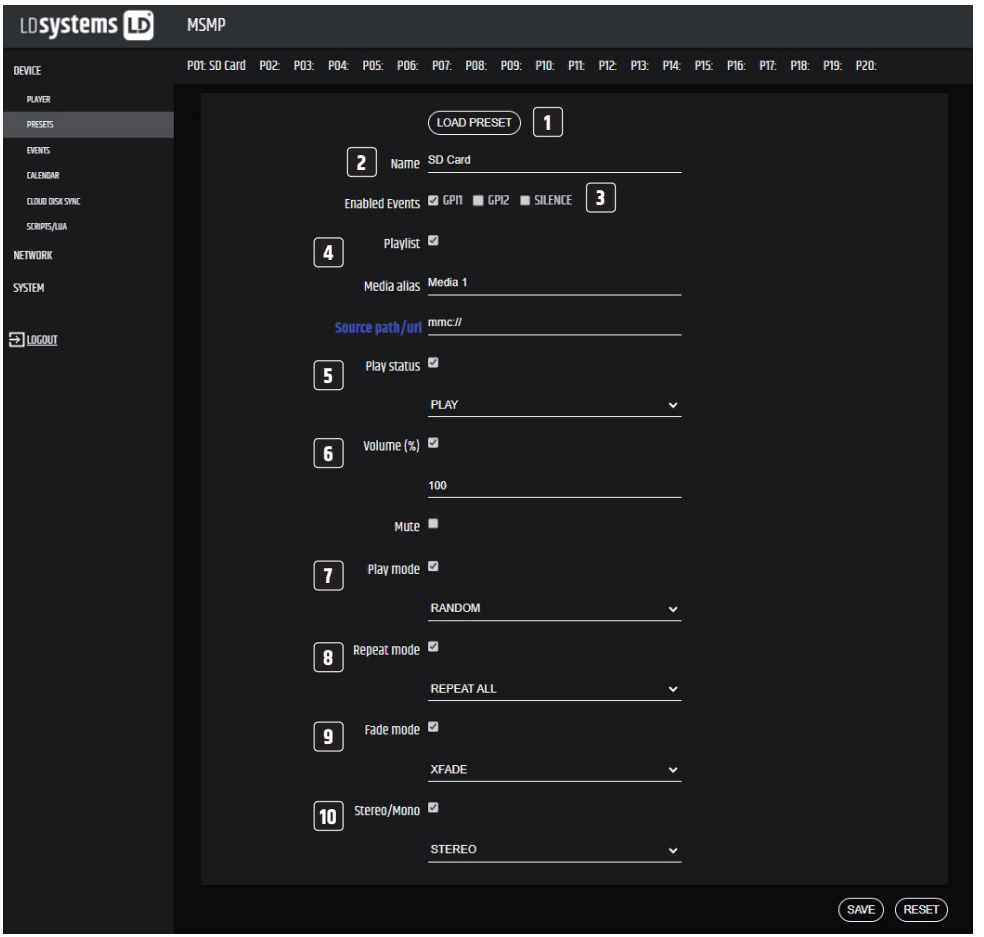
1 HEADER:
All 20 presets are displayed here, which have the following standard designations: P01, P02...P20. Click on a name to view the configuration of the relevant preset. The designations under which the presets appear here can be changed in the respective configuration. After you have saved this setting in the preset, you must refresh the browser page (F5) so that the changes are displayed in the header.

2 INFORMATION: Here you will find useful information on configuring the presets.

3 OPTIONS FOR CONFIGURING the selected preset.

4 SAVE BUTTON:
Used to save the settings made in the currently edited preset.

5 RESET BUTTON:
Used to restore the last saved configuration of the currently edited preset.



1 "LOAD PRESET" BUTTON.
The selected preset is loaded. This function is useful for accessing a preset immediately after editing it, without having to switch pages or to manipulate the device.

2 NAME:
Name of the preset. This name appears in the preset list on the **PLAYER**page, in the header of the **PRESETS** page, and in the **LD Systems QUESTRA**application.

3 ENABLED EVENTS:
Activates/deactivates the events initiated by the General Purpose Inputs (GPIs) and the event initiated by silence detection in the preset. The GPIs and the event to be initiated by silence detection must be configured on the event page(**EVENTS**). You can find more information on this in the **EVENTS** chapter.

For a GPI event to work properly, it must **be configured**, **activated** in the preset, and the **preset must be loaded**. If the GPIs of a preset that has been accessed are not activated, they cannot function.

4 PLAYLIST:
If this option is activated, the playlist currently being played is replaced by the source entered in the Source path/url field as soon as the corresponding preset is accessed.

- **Media alias:** Alias name of the source saved in the preset **(Source path/url)**. It can also be used to access this medium directly from any preset on the player side or in the **LD Systems QUESTRA** application.
- **Source path/url:** Saves a network address or a local address in the preset. This must be a **valid address** for the device to play back audio content correctly. You will find instructions for entering local addresses (USB, SD, AirPlay, ...) in the application instructions. Click on "Source path/url" (in blue) to open the address entered in this field in a new browser tab. This option is available on several pages of the application. It is useful for checking that an audio source (e.g. Internet radio) is functioning properly or for copying the address to create playlists (e.g. .m3u file). The audio formats and playlists supported by the player can be found in the technical data (datasheet).

5 PLAY STATUS:
If this option is activated, the state of the player is overwritten when a preset is loaded.

6 VOLUME (%) / MUTE:
If this option is activated, the volume/mute state of the player is overwritten when a preset is loaded.

7 PLAY MODE:
If this option is activated, the playback mode (sequential/random) is overwritten.

8 REPEAT MODE:
If this option is activated, the repeat mode (play all, play one track, repeat all, or repeat one track) is overwritten.

9 FADE MODE:
If this option is activated, the type of transition from one track to the next within a playlist **(off/fade/crossfade)** is overwritten.

10 STEREO/MONO:
If this option is activated, the definition of the output as a mono or stereo output is overwritten.

7.2.2.1 EXAMPLES OF AUDIO SOURCES

The addresses shown here are only **examples**, meaning these Internet radio stations or local file addresses may not work on your player.

Media Path	Media Location	Items included in the play queue (just valid audio media)
usb://	USB storage device, root folder	Media stored in the USB root folder and up to the third level of sub-folders in it
mmc://	SD card storage device, root folder	Media stored in the SD card root folder and up to the third level of sub-folders in it
usb://musicfolder/jazz/	USB storage device, \musicfolder\jazz folder	Media stored in the USB device \musicfolder\jazz folder and up to the third level of sub-folders in it
mmc://musicfolder/jazz/	SD card storage device, \musicfolder\jazz folder	Media stored in the SD card \musicfolder\jazz folder and up to the third level of sub-folders in it
mmc://evacuation_message.mp3	SD storage device, root folder	mp3 single file named **evacuation_message.mp3**
usb://evacuation_message.mp3	USB storage device, root folder	mp3 single file named **evacuation_message.mp3**
usb://...path.../my_collection.m3u mmc://...path.../my_collection.m3u	Defined by the m3u playlist file	Media pointed by **my_collection.m3u** playlist **...path**... is the folder path where the m3u file is located
usb://...path.../my_songs.m3u8 mmc://...path.../my_songs.m3u8	Defined by the m3u8 playlist file	Media pointed by **my_songs.m3u8** playlist **...path**... is the folder path where the m3u8 file is located
usb://...path.../best_of_rock.pls mmc://...path.../best_of_rock.pls	Defined by the pls playlist file	Media pointed by **best_of_rock.pls** playlist **...path**... is the folder path where the pls file is located

7.2.3 EVENTS

There are three events available: two of which are initiated by the GPI ports (via potential-free external contact closure, connected to the GPI ports on the back of the device) and the third by silence detection. Both event types can be configured on the **EVENTS** page. Selecting the corresponding tab takes you to the configuration of an event.

Attention: Please note that for an event to function properly, it must be enabled in the currently selected preset.

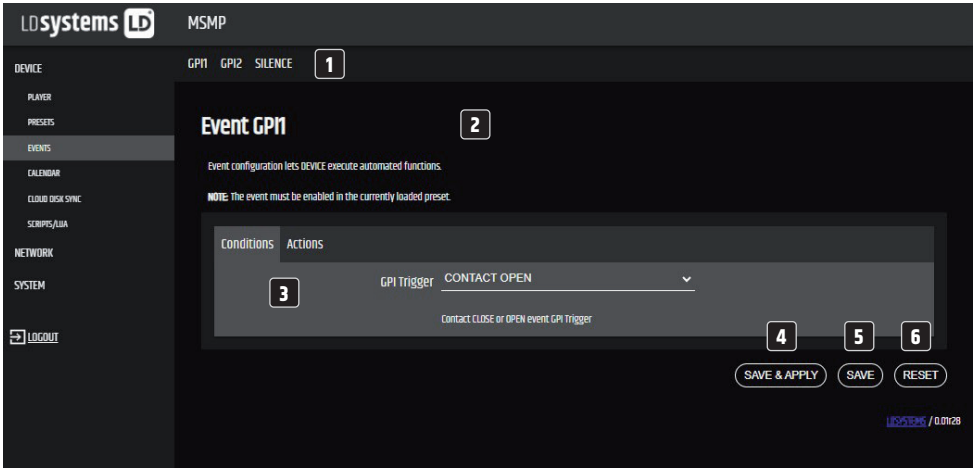


Illustration: Example for the configuration of a GPI event

1 HEADER:
Both the GPI and the silence detection events are displayed here. Click on an event to view its configuration.

2 INFORMATION:
Useful tips for configuring events.

3 OPTIONS FOR CONFIGURING each selected event.

4 "SAVE & APPLY" BUTTON.
Used to save and adopt the settings made in the GPI which is currently being edited. If this event is enabled in the currently active preset, it is not necessary to reload the preset.

5 SAVE BUTTON:
Used to save the settings made in the GPI currently being edited without adopting them. This means that the changes made are only applied when the preset in which the event is enabled is reloaded.

6 RESET BUTTON:
Restores the last saved configuration of the event currently being processed.

Attention: You can configure the various tabs (Conditions, Actions) before saving; the changes will not be lost.

7.2.3.1 GPI EVENTS

There are two GPI events: GPI1 and GPI2. These can be configured so that they are initiated in different ways and carry out independent actions.

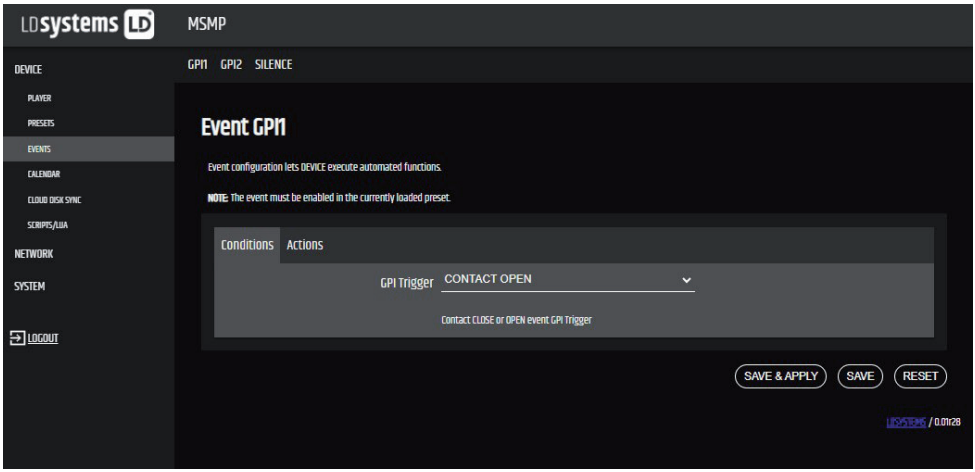


Illustration: Configuration of a GPI, Conditions

- **Conditions:**
  - GPI Trigger: Normally open or normally closed contact; to specify initiation based on contact closure or contact release

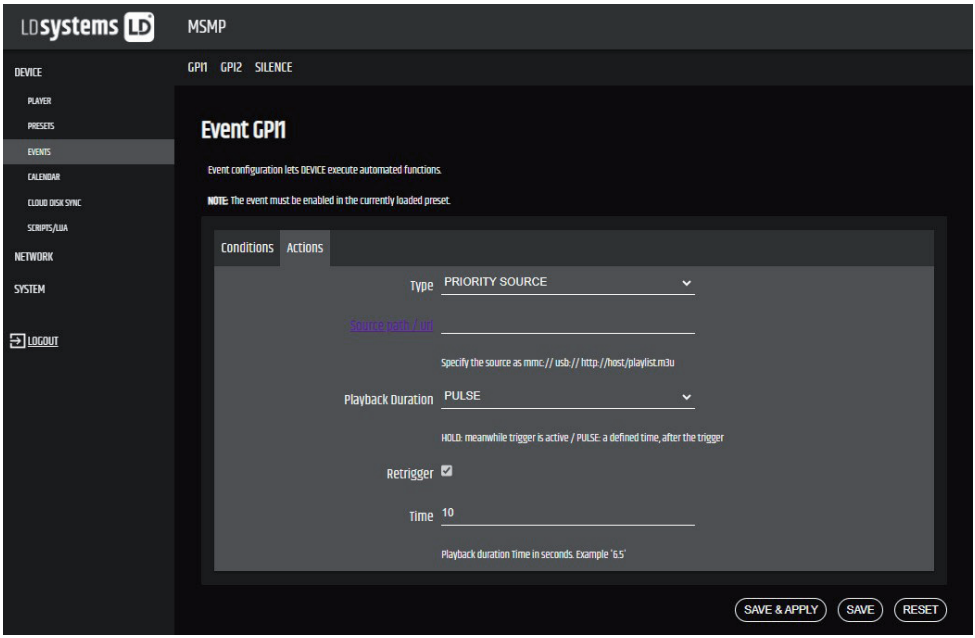


Illustration: Configuration of a GPI, Conditions

- **Actions tab:** Action that the device should carry out after GPI activation; There are various options and eventtypes:
  - **INTERNAL:** Internal pulse; useful for initiating actions within a script.
  - **PRESET RECALL**: Access of a preset. Select the preset that you want to load by activating the GPI.
  - **TRANSPORT CONTROL:** Control of the current playback, **STOP, PLAY, PREV/RW, NEXT/FW, PLAY/PAUSE**.
  - **LOAD & PLAY SOURCE:** Loading and playing of a source. The source must be defined in the "**Source path/url**" field.
  - **PRIORITY SOURCE:** Playback of a source with priority over the programme's audio content. The source defined in the "**Source path/url**" field attenuates the source currently being played (programme's audio content). Once the prioritised audio playback is finished, the programme audio content is played again, whereby the volume is slowly increased until the previous level is reached again.
  - If you select the **HOLD option**, the source defined in the "**Source path/url**" field remains prioritised **AS LONG AS** the triggering pulse stops (GPI direct/reverse, depending on the definition in the "**Source**" tab).
  - If you select the **PULSE option**, the source defined in the "**Source path/url**" field remains prioritised for the time period (in seconds) entered in the "**Time**" field. The **Retrigger** option allows the priority event to be re-initiated without having to wait until it has elapsed; the timer is then restarted.

A prioritised event can be useful for playing back announcements, previously saved messages, emergency messages, etc. You can find more information on the topic of priorities in the chapter All about priorities.

7.2.3.2 EVENT INITIATED BY SILENCE DETECTION – SILENCE

The MSMP has a special event, the SILENCE or silence detection event: **no real analogue audio signal is present** at the device outputs. This event allows the player to continue playing media if the programme audio content being played ends or is interrupted for any reason, which can occasionally happen if problems occur (interruption of the Internet connection, accidental disconnection of the mains cable, incorrect files, etc.): "**The show must go on**".

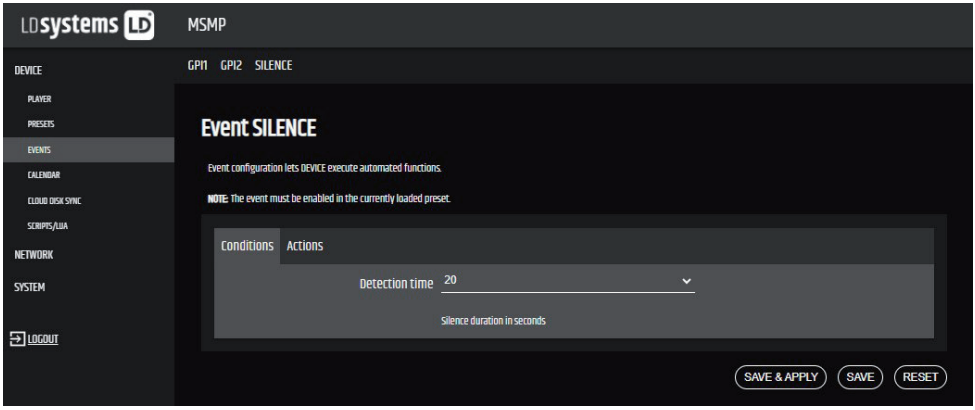


Illustration: Configuration of the silence event

- **Source tab:** Waiting time or trigger threshold (**detection time**). Set the permitted silence duration (without audio signal) before activating the event here.
- **Target tab:** Select the action that the MSMP should perform after the waiting time has elapsed.
  - **Internal:** Internal pulse. Useful for initiating actions within a script
  - **Preset recall:** Access of a preset Select the preset that you would like to access by activating the silence event.
  - **Load & Play Source:** Loading and playing of a source. The source must be defined in the "**Source path/url**" field.

Recommendation: Configure the loading of local audio content (stored on USB or uSD) as an action to ensure that audio content is always available, regardless of any incidents that occur outside the player in the network connection. Make sure two things are done when accessing presets: ensure that the audio address saved in the selected preset is a local address (e.g. usb://), and that the overwriting of the player status(**Play Status**) is enabled in the preset so that the **PLAY** option is set. As a result, this will force the playback of a local storage medium, ensuring that the music programme continues.

7.2.4 CALENDAR

The **Calendar** page allows you to configure events that are initiated by the calendar.
A calendar event performs a specific action, for example, loading a prioritised announcement, according to configurable parameters: date, time, repetitions, etc.

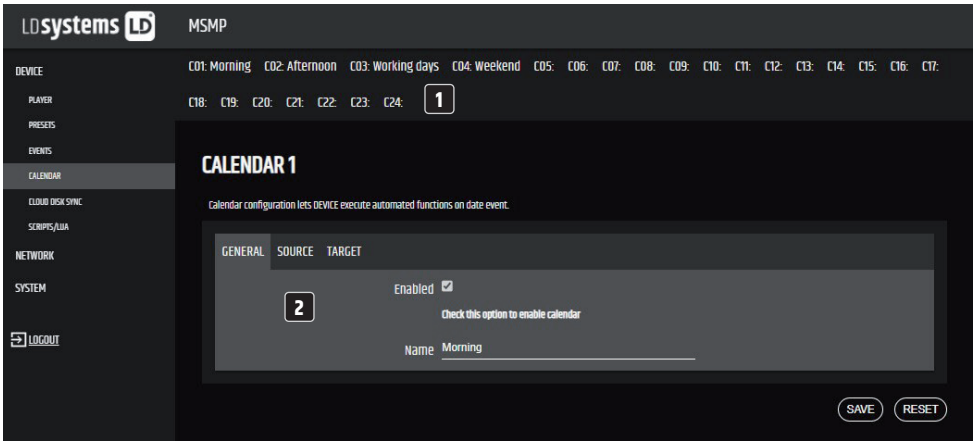


Illustration: Example for a calendar event configuration.

1 The MSMP has **24 calendar events**, all of which are fully configurable. The standard designations are: C01, C02 ... C24. Clicking on one of these designations takes you to the configuration of the specific calendar event. The calendar event designations shown here can be changed as part of the respective configuration. After you have saved this setting in the calendar event, you must refresh the browser page (F5) in order to display the changes.

2 The configurable parameters of the individual calendar events are summarised in three tabs:
- **General:** Activation/deactivation of calendar events and name
- **Source:** Start and end date, start and end time, as well as conditions for the repetition of an event
- **Target:** Action to be performed when the event is initiated.

Attention: Before you configure calendar events, you should ensure that the time zone is configured correctly: **System/Name and time**.

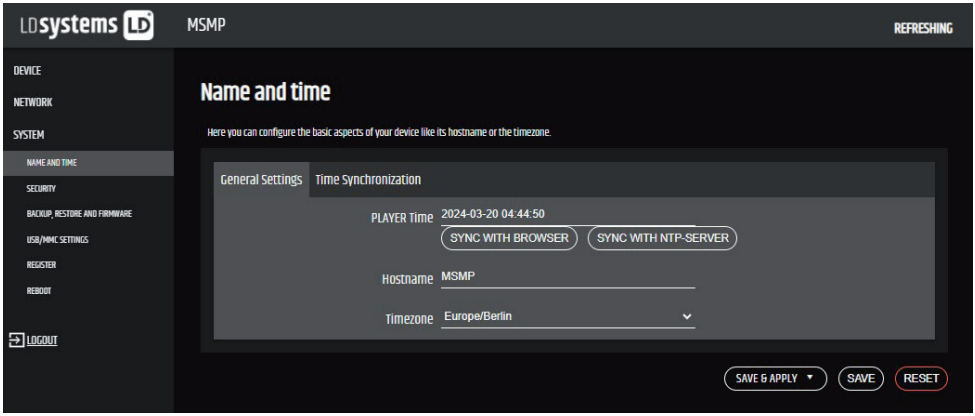


Figure: Configuration of name and time

7.2.4.1 GENERAL

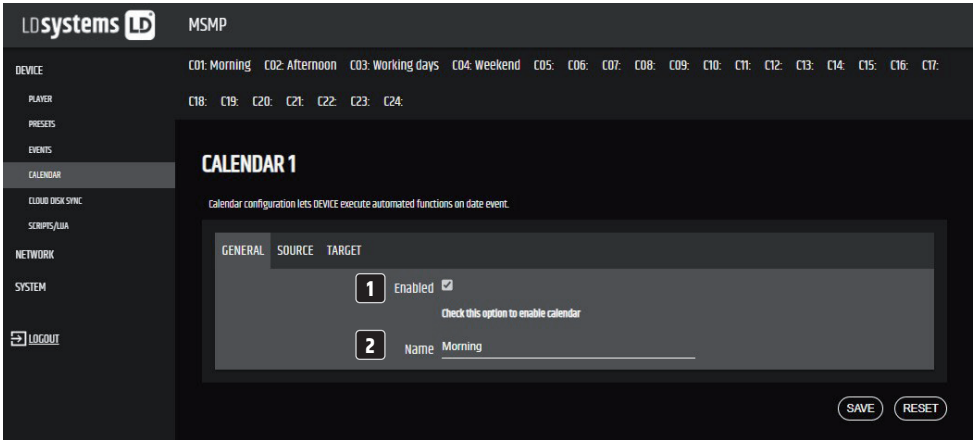


Illustration: Configuration of a calendar, General

1 **Enabled:** Activation or deactivation of the calendar. If the calendar is activated (ready to be initiated by a date/time), it is activated in all presets.

2 **Name:** Name of the calendar.

7.2.4.2 SOURCE

The **SOURCE** tab is used to set the time/date parameters in order to initiate an event and the conditions for its repetition.

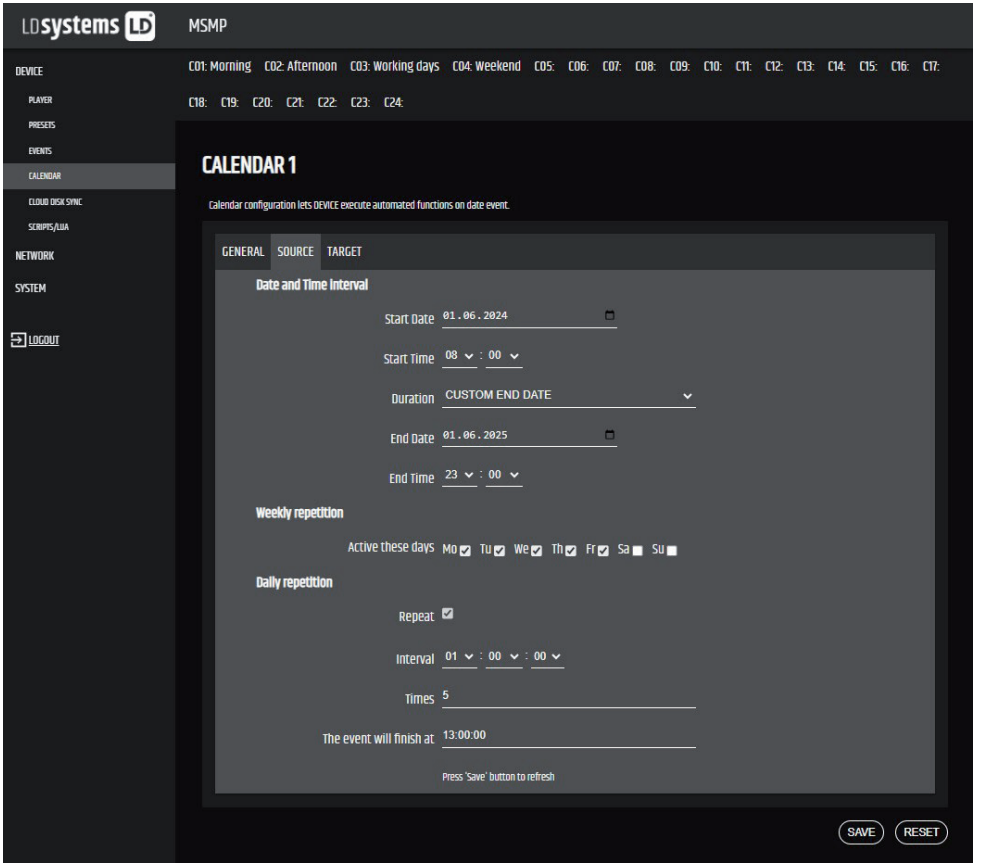


Illustration: Configuration of a calendar, General

7.2.4.3 DATE AND TIME INTERVAL

Defines the date and time when the event starts and, if applicable, the date and time when it ends.

- **Start date:** Date of the start of the event. This field is optional. If no specific date is selected, the event begins on the day on which the changes are applied. If you select a date that is before the current date, the event applies from the day on which the changes are applied.
- **Start time:** Time of the start of the event. This field is mandatory. If a repeat condition has been defined, this is the time at which the event is initiated for the first time on each day.
- **Duration:** Duration or validity of the calendar event. Allows the selection of time periods for the duration of the calendar event.
  - **FOREVER** (forever): Default value. The calendar event has no end date.
  - **CUSTOM END DATE:** End of the calendar event. Allows you to set a date and time for the last initiation of the calendar event, regardless of the repeat conditions.

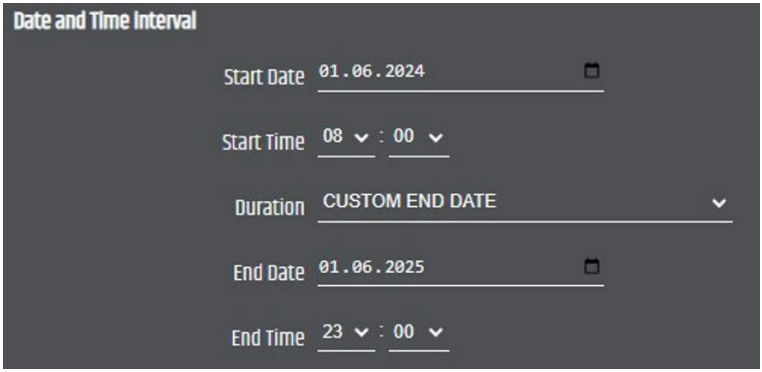


Illustration: Example of an interval

7.2.4.3.1 WEEKLY REPETITION

Weekly template or days of the week on which the calendar event should repeat at the time specified under "**Start Time**".
If, for example, the days from Monday to Friday are selected (working days), the configured event is not initiated on Saturdays and Sundays (weekends).

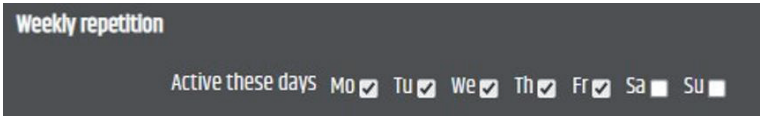


Illustration: Example of a weekly template

If at least one day of the week is not selected, the calendar event is never initiated. The same applies if you configure an event that is to be initiated on a specific day of the week, but this day is not selected in the weekly template.

7.2.4.3.2 DAILY REPETITION

Daily repetitions. This option is deselected by default. If it is activated, a drop-down window opens to configure the repeat conditions:

- **Interval:** Repetition interval. Specifies the time intervals at which the calendar event is to be repeated from the start time ("**Start Time**").
- **Times:** Number of repetitions. Specifies how often the calendar event should repeat at the intervals specified under "**Interval**". The first everyday initiation of the event does not count as a repetition. This means that if you want an event to be initiated twice a day, the value 1 must be entered under "Times" (the first initiation + 1 repetition). The value to be entered here must always be equal to or greater than 1.

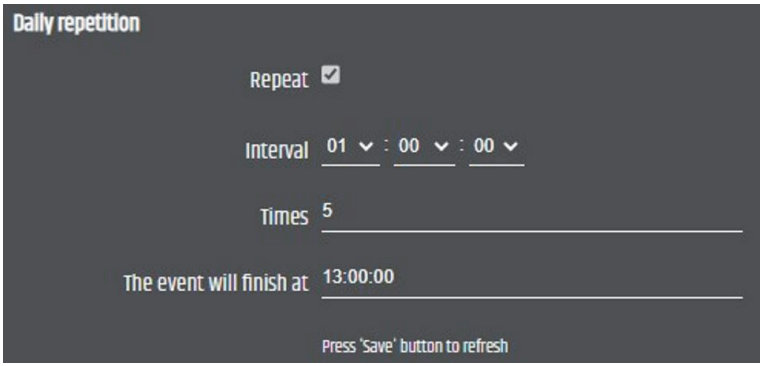


Illustration: Example of a daily repetition

- **"The event will finish at"** specifies the time at which the calendar event will be executed for the last time on each day. This parameter cannot be configured (read-only). It is only intended as a guide and should help the user to optimise the configuration of the "**Interval**" and "**Times**" parameters.

7.2.4.4 TARGET

An action to be performed each time the calendar event is initiated.

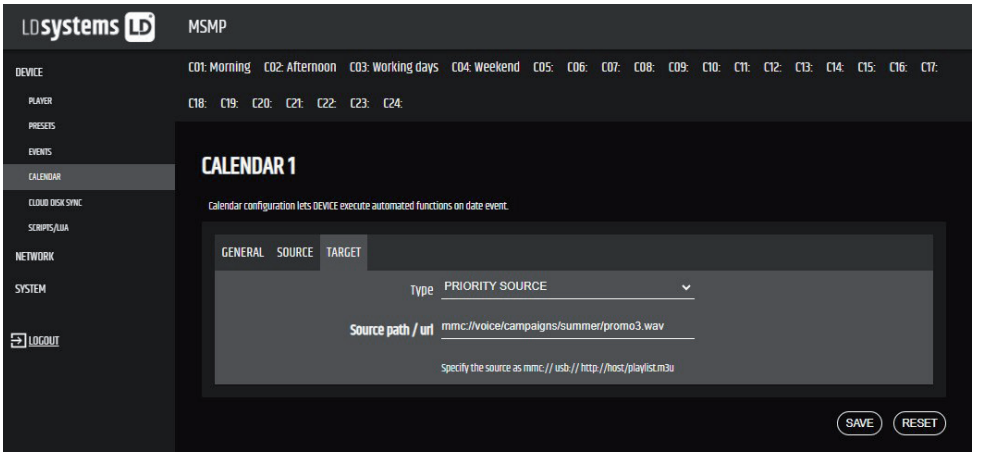


Illustration: Example of a calendar event, target

These can be the following types of action:

- **Internal:** Internal impulse (no action is executed directly, but actions can be initiated via scripts)
- **Preset recall:** Loading of a preset
- **Transport control:** Press a button on the transport bar: **STOP, PLAY, PREV, NEXT, PLAY/PAUSE**
- **Load & Play source:** Loading and playing of a source
- **Priority source:** Playback of a priority source. The prioritised source overwrites the source, which is currently playing. Once the prioritised message/announcement has ended, playback of the previous source is resumed.

7.2.4.5 ALL ABOUT PRIORITIES

Calendar events have a **lower** priority than events that are initiated via GPI. Different priority levels can therefore be defined. In retail, for example, calendar events can be used to initiate special offer announcements, while GPI events are used to initiate emergency announcements, e.g. for evacuation. In contrast, a higher index determines the priority if two calendar events are initiated simultaneously. For example, the event **CALENDAR02** could be configured so that an announcement is repeated every hour, while **CALENDAR03** should repeat another announcement every two hours (both events have identical start times). In this case, the announcements would alternate every hour, as **CALENDAR03** has priority over **CALENDAR02**.

If a calendar event occurs while another is already in playback, the event that occurred last overwrites the one in playback, regardless of the index of both events.

7.2.4.6 PRACTICAL EXAMPLE FOR THE CONFIGURATION OF A CALENDAR EVENT

A retail company with opening hours from 10:00 a.m. to 8:00 p.m., from Monday to Friday, would occassionally like to have background music and broadcast announcements play for customers during in-between times.

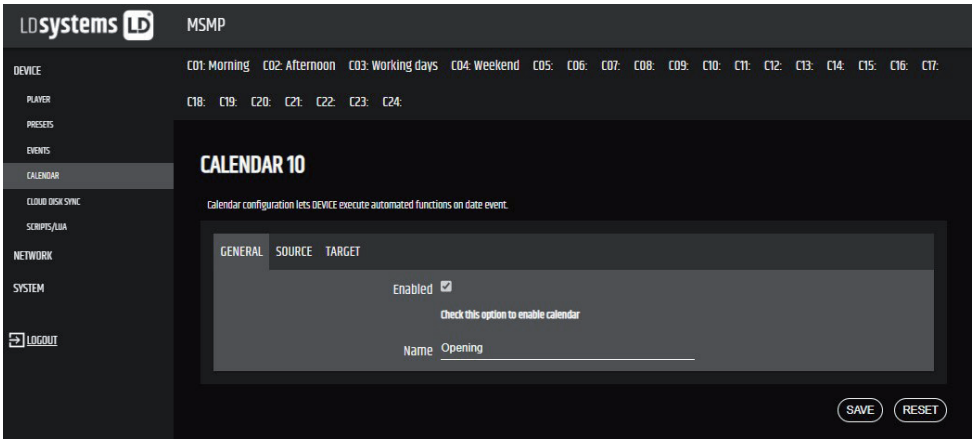
- **Background music:** The same audio stream should always be played from 9:45 a.m. to 8:00 p.m. No audio content should be heard in the shop from 8:00 p.m.
- **Announcements:** The closing time should be announced every day 15 minutes before the shop closes (pre-recorded announcement). A reminder should be played five minutes before the end of the programme.
- **Advertising campaigns:** From 15 December to 15 January, there will be a special Christmas campaign announcing special offers (pre-recorded announcement). This announcement will be repeated every 30 minutes during the campaign.

These requirements can be met in different ways. In our example, we try to illustrate the most important features of the calendar events in a simple way.

7.2.4.6.1 CALENDAR FOR BACKGROUND MUSIC

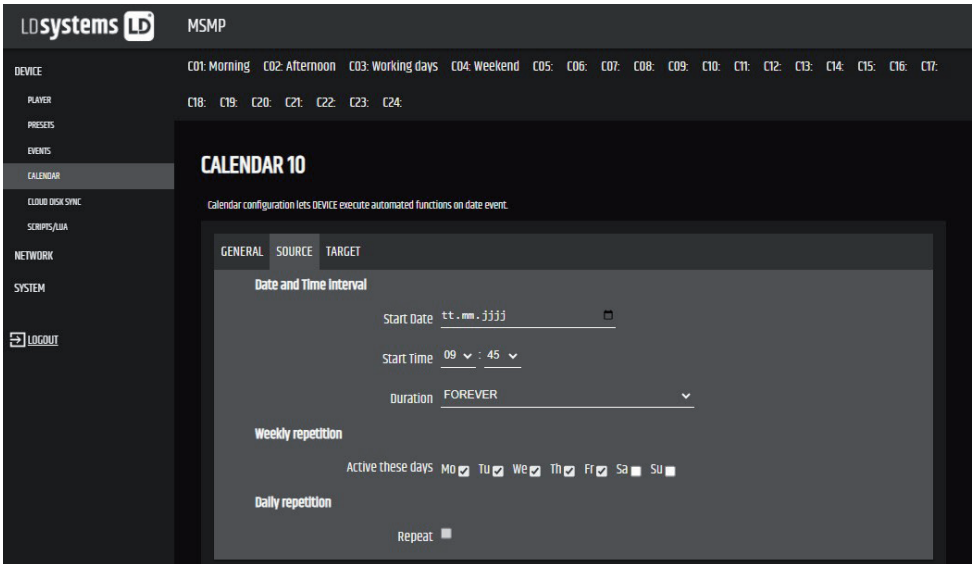
Two calendar events are created: one to load and play the stream, the second to pause playback.

The calendar is activated and given a unique name.

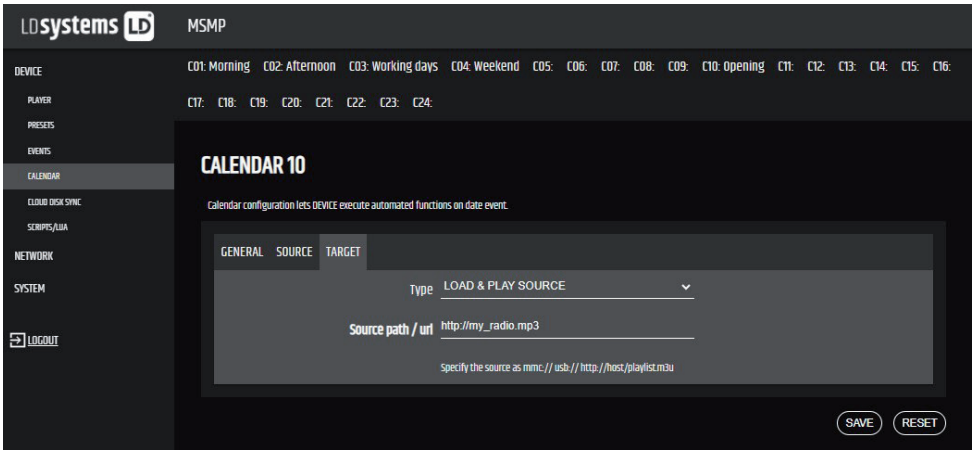


As no specific start date is specified, we leave the "**START DATE**" field at its default value so that the event is active as soon as the changes are applied. The time is known (9:45 a.m.) and should be reproduced daily without an end date**(FOREVER**).

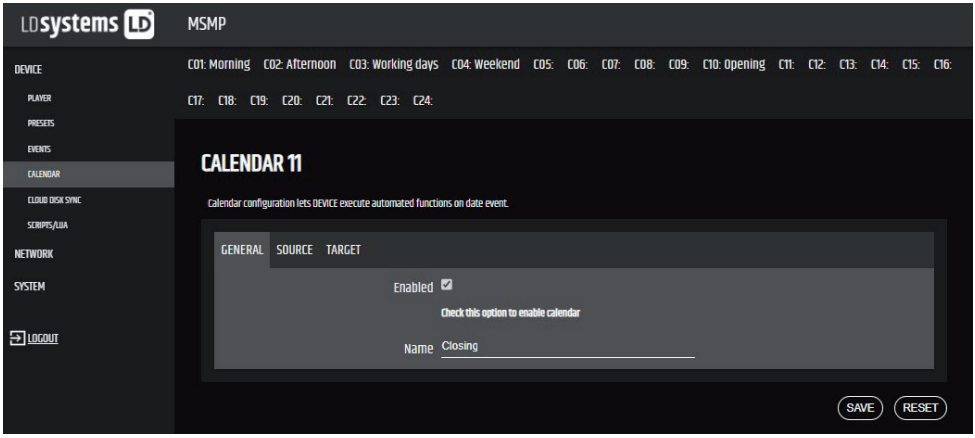
Since the event is to be repeated from Monday to Friday, the corresponding days are selected in the weekly template.

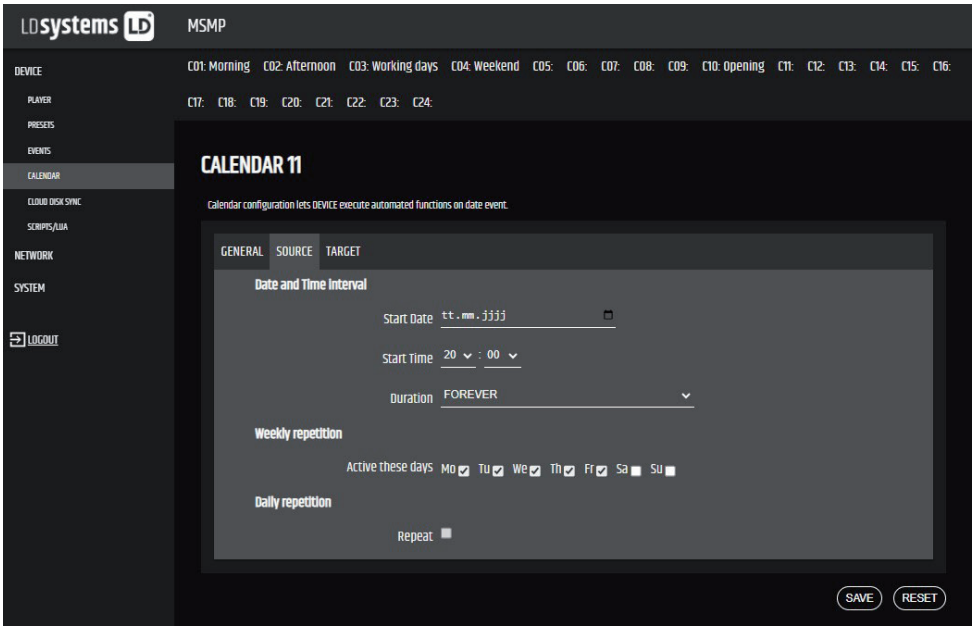


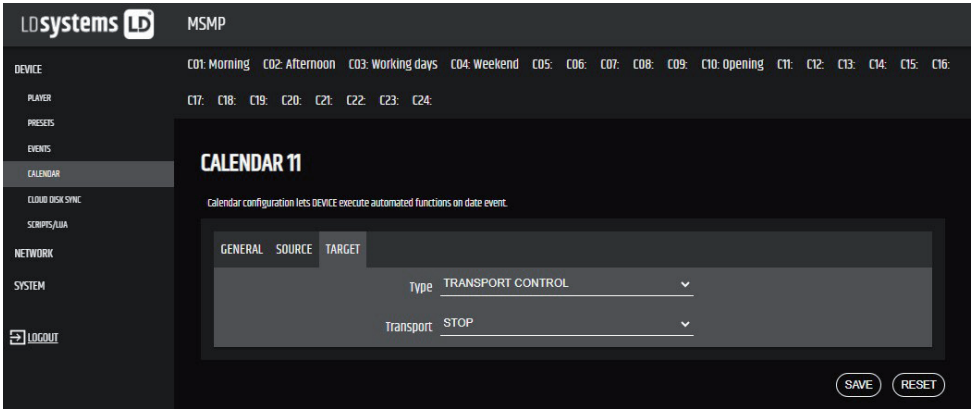
The action of loading and playing the specified stream is configured.



The configuration of the calendar event that is to stop the playback of the background music is carried out in the same way, with the difference that the action to be carried out now consists of stopping (**STOP**) the playback. The calendar event is then given a different name and a different start time.

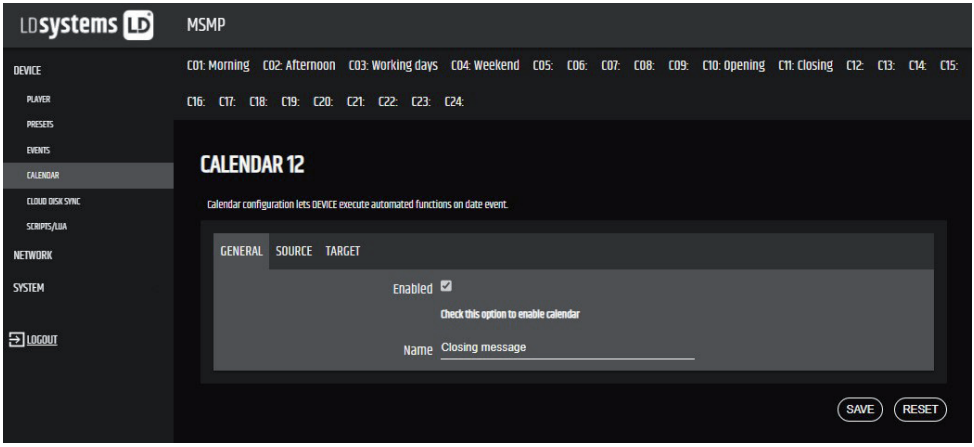



LDsystems
MSMP
DEVICE
PLAYER
PRESETS
EVENTS
CALENDAR
CLOUD DISK SYNC
SCRIPTS/LUA
NETWORK
SYSTEM
LOGOUT
C01: Morning C02: Afternoon C03: Working days C04: Weekend C05: C06: C07: C08: C09: C10: Opening C11: C12: C13: C14: C15: C16:
C17: C18: C19: C20: C21: C22: C23: C24:
CALENDAR 11
Calendar configuration lets DEVICE execute automated functions on date event.
GENERAL SOURCE TARGET
Date and Time Interval
Start Date tt.mm.jjjj
Start Time 20 : 00
Duration FOREVER
Weekly repetition
Active these days Mo Tu We Th Fr Sa Su
Daily repetition
Repeat
SAVE
RESET

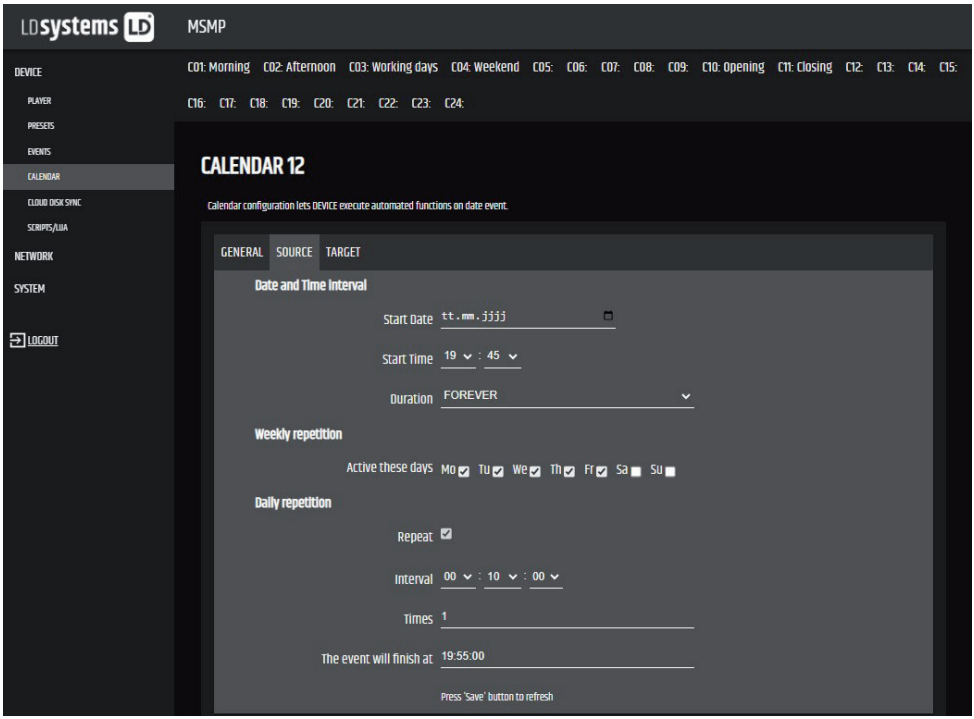

LDsystems
MSMP
DEVICE
PLAYER
PRESETS
EVENTS
CALENDAR
CLOUD DISK SYNC
SCRIPTS/LUA
NETWORK
SYSTEM
LOGOUT
C01: Morning C02: Afternoon C03: Working days C04: Weekend C05: C06: C07: C08: C09: C10: Opening C11: C12: C13: C14: C15: C16:
C17: C18: C19: C20: C21: C22: C23: C24:
CALENDAR 11
Calendar configuration lets DEVICE execute automated functions on date event.
GENERAL SOURCE TARGET
Type TRANSPORT CONTROL
Transport STOP
SAVE
RESET

7.2.4.6.2 CALENDAR FOR CLOSING TIME ANNOUNCEMENTS

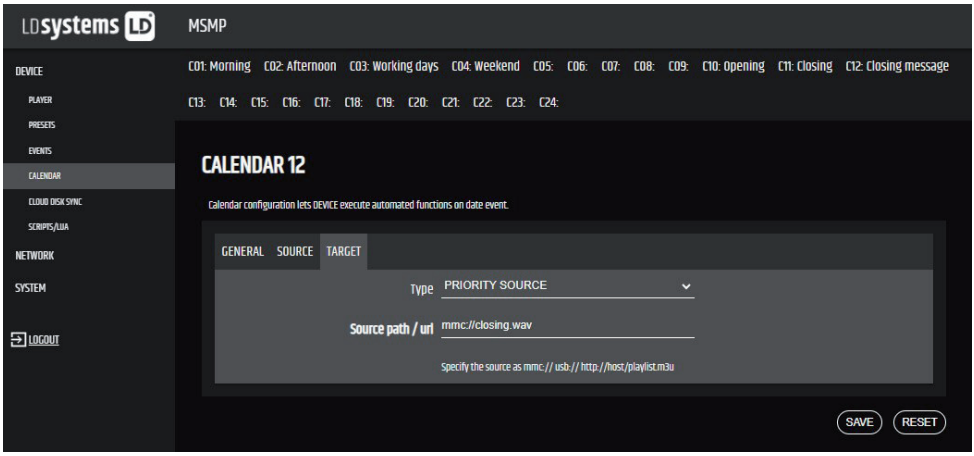
The closing time should be announced every day 15 minutes before closing (pre-recorded announcement). A reminder should be played five minutes before closing.



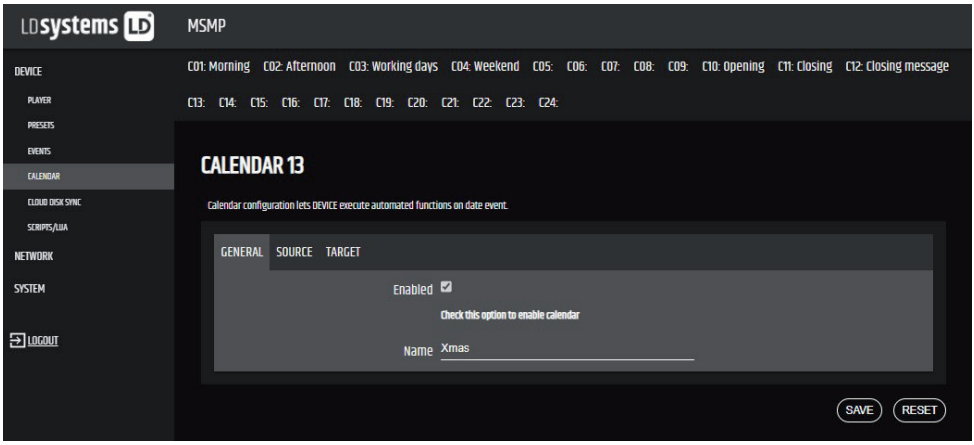
The announcement should be made twice each day: 15 minutes before closing (7:45 p.m.) and again 5 minutes before closing time (7:55 p.m.). A calendar event must therefore be configured that is repeated once, 10 minutes after it was initiated for the first time. The repetitions (**REPEAT**) are set up successfully, and the **Interval** and **Time** parameters are configured successfully.



Finally, the announcement saved on the SD card ("mmc://...") is prioritised and initiated.

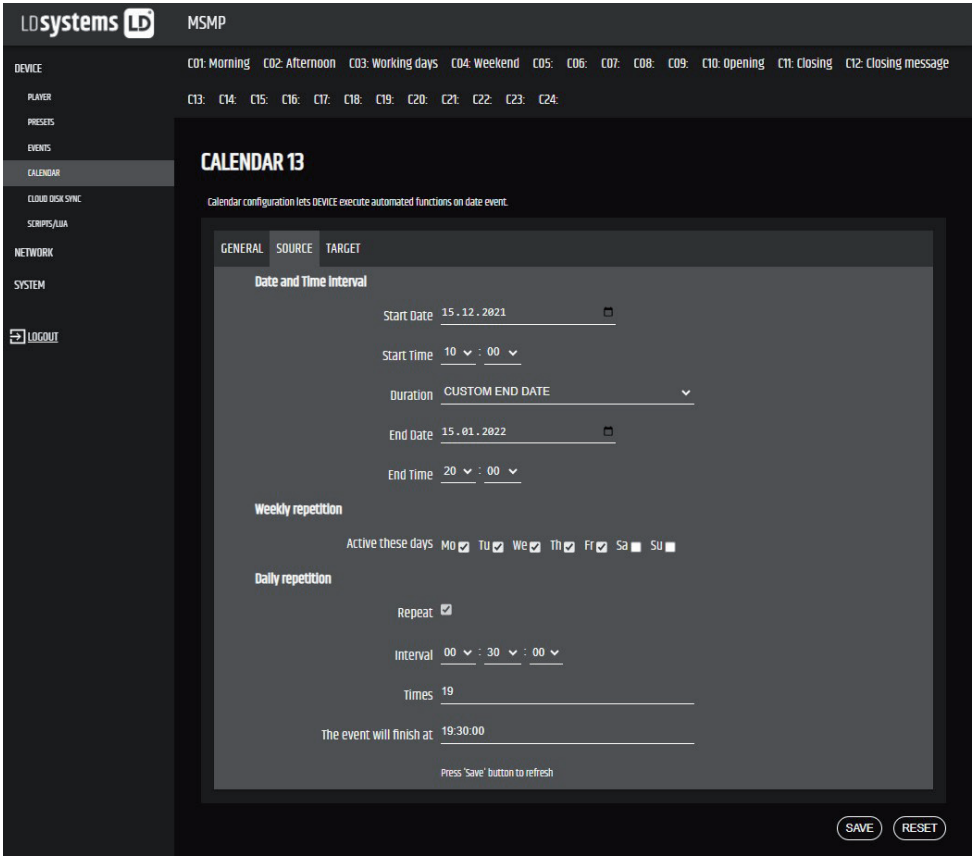


7.2.4.7 CALENDAR FOR THE CHRISTMAS CAMPAIGN

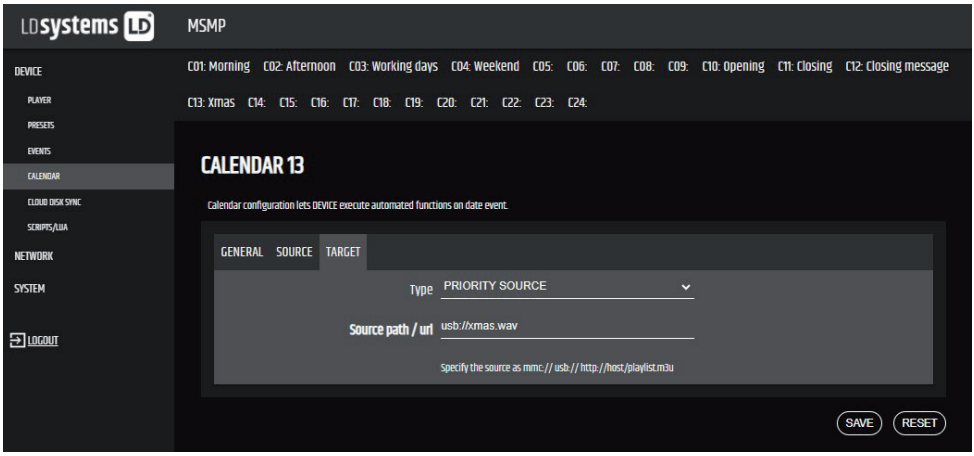


As a specific calendar period is specified in this case (15/12/21 to 15/01/22), an end date must be configured. This is done by selecting **CUSTOM END DATE** and correctly configuring the **End date** and **End time** parameters.

As far as the repeats are concerned, the announcement should be made every 30 minutes, and we know that the shop closes at 8:00 p.m. As no more audio content is broadcast at 8:00 p.m., we set the number of repetitions so that the event is carried out for the last time 30 minutes before closing time.



Finally, the announcement saved on the USB card (“usb://...”) is prioritised and initiated.



7.2.5 CLOUD DISC SYNC

The **CLOUD DISK SYNC** module enables the device to download external audio content to local storage media (USB/uSD). If this module is activated, it carries out a daily check of a remote location where the audio content is hosted, compares it with the current content of the local storage media (USB/uSD) and, if necessary (if differences are detected), synchronises the local content so that it becomes an exact copy of the external content. This is a secure method of playing content stored on a local storage medium during the device’s operating hours (during the day) without having to take the risks of receiving streaming in real time.

Figure: Folder synchronisation with Store and Forward (rsync)

The MSMP offers the option of synchronising via the service provider Store and Forward (rsync).

7.2.6 STORE AND FORWARD (RSYNC)

The **Store and Forward** module enables the content of the USB/uSD device with a folder hosted on a remote server to be synchronised on a daily basis. It is also used in conjunction with the reset mode **Load preset1** to automatically play this content. This service uses the synchronisation tool rsync**(Remote Sync**).

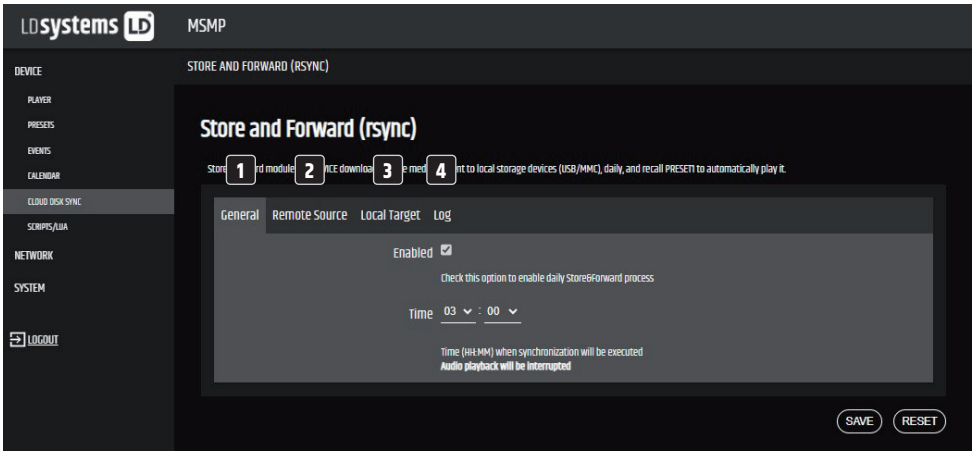


Illustration: Store and Forward module

1 **General:** The S&F service is activated here, and the synchronisation time is set.
2 **Remote source:** Configuration of the remote server
3 **Local target:** Configuration of the local folder in which the content is stored
4 **Log:** Log of the S&F module's activities

Further information on the Store and Forward service can be found in the chapter Configuring an SSH server for Store and Forward (rsync).

7.2.6.1 GENERAL

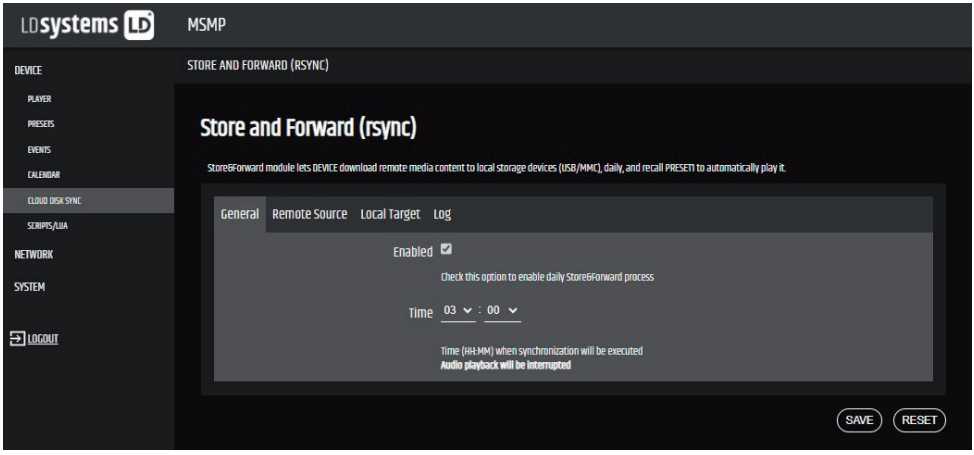


Illustration: S&F, General

- **Enabled:** Enable/disable the execution of daily synchronisation
- **Time:** Time at which the daily synchronisation is to be carried out

7.2.6.2 REMOTE SOURCE

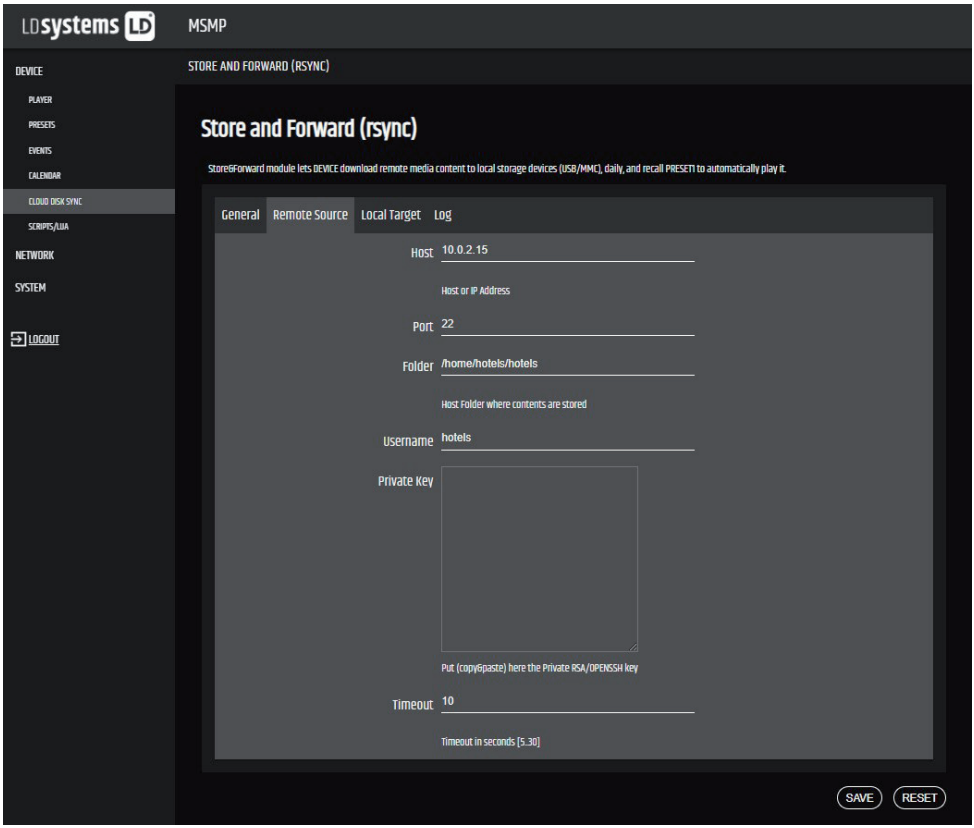


Illustration: S&F, Remote source

- **Host:** Host or IP address of the server
- **Port:** Server port, 22 by default
- **Folder:** Folder on the server in which the audio content to be synchronised is stored
- **Username:** Username or name of the content group
- **Private key:** Private password generated for the user or for the specified content group

For security and efficiency reasons, the remote server hosting the content must be an **SSH server**, and public and private passwords must be enabled and used.

7.2.6.3 LOCAL TARGET

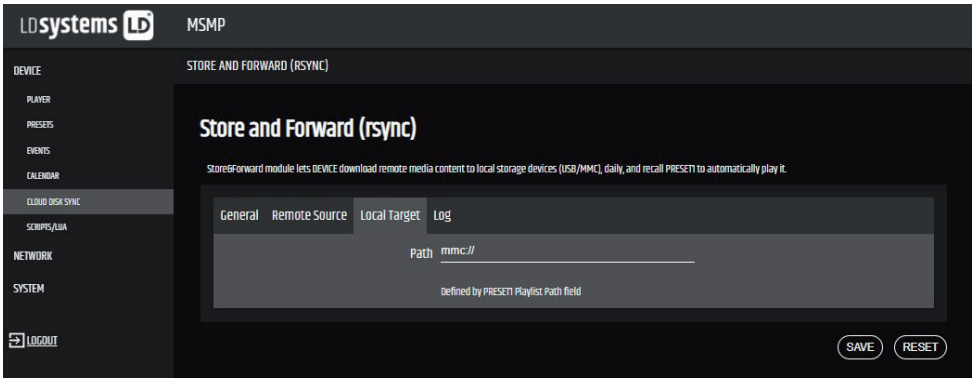


Illustration: S&F, Local target

- **Path:** Defined by the **Playlist Path** field of PRESET01 and can be changed in the preset settings

7.2.6.4 LOG

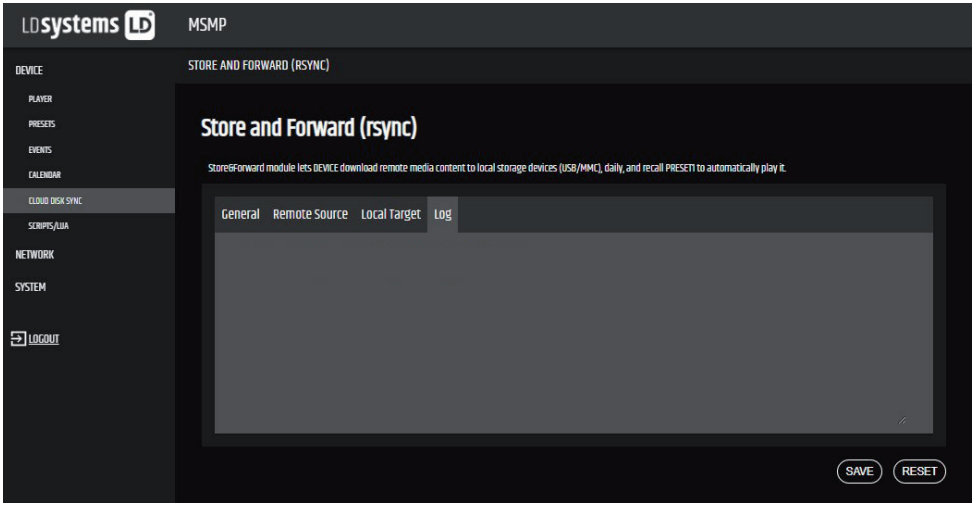


Illustration: S&F, Log

- Display of data and activities in connection with the **rsync** synchronisation process. Useful for solving possible server or player configuration problems.

7.2.7 SCRIPTS/LUA

A script is a simple programme, a file with commands, written by the user in the programming language LUA (https://www.lua.org/).

Each script can be seen as a kind of script that the player is supposed to realise, i.e. a series of pre-programmed tasks to be performed as soon as the corresponding trigger is received.

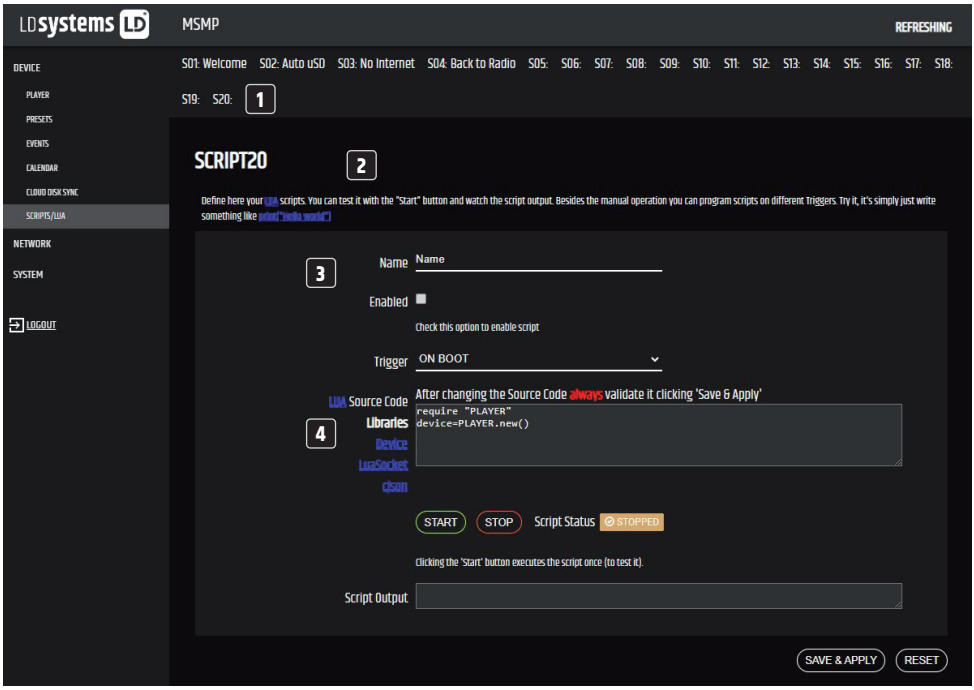


Illustration: Example of a script

1 **20 scripts** can be created for the MSMP; each of which is fully configurable. The default names are: S01, S02...S20. Clicking on a name takes you to the configuration page of the corresponding script. The script names shown here can be changed on the configuration page. After saving this script setting, you must refresh the browser page (F5) to see the changes made.

2 Useful information on script configuration and Lua reference manual

3 Configurable script parameters:

- **Name:** Name that the user specifies for the script. This name appears in the header of the **Scripts/LUA** page.
- **Enable:** Enable or disable the script
- **Trigger:** Impulse to execute the script. There are various options for triggering a script or the automation of tasks:

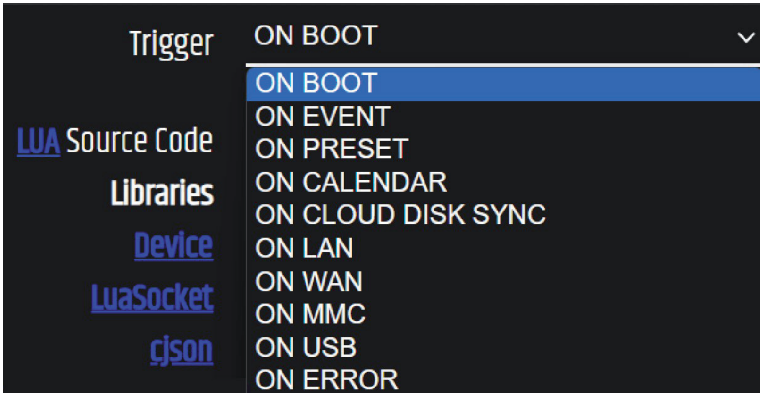


Figure: Available trigger pulses

- **ON BOOT:** Start-up tasks can be configured during device activation.
- **ON EVENT:** With activation of a GPI event (GPI1 or GPI2), in addition to the silence detection event (SILENCE)
- **ON PRESET:** After loading a preset. One of the 20 presets must be selected, which then activates the script.
- **ON CALENDAR:** When a calendar event is initiated. One of the 24 calendar events must be selected, which in turn initiates the script.
- **ON CLOUD DISK SYNC:** With successful synchronisation with a remote server (synchronisation result "**OK**"). It must be specified: **rsync**.
- **ON LAN:** When the local network (LAN) is detected as either available or unavailable
- **ON WAN:** When Internet access (WAN) is detected as either available or unavailable
- **ON MMC:** When a uSD card is connected/disconnected and correctly recognised by the player
- **ON USB:** When a USB device is connected/disconnected and correctly recognised by the player
- **ON ERROR:** When an error occurs, which is listed in the form of a code in the "**Error code**". You will find a table of error codes in the programming library (appendix for programmers).
- **LUA SOURCE CODE:** The text of the script is entered in this field.

4 **Buttons:** Buttons for executing and stopping the script. The **START** button executes the script immediately without the programmed pulse having to occur. In order for the changes to be applied, the script must be saved before pressing this button. The button is useful for carrying out tests. The **STOP** button stops script execution. These functions are particularly useful when programming scripts in order to check the actions executed by the individual scripts and to clean up the respective code.

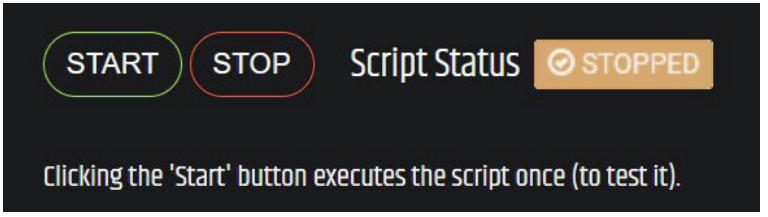


Figure: Buttons for the execution of scripts

- **Script Status:** Shows the status of the script: **RUNNING** (flashing) when the script is being executed or **STOPPED** (permanently lit) when it has finished or stopped executing.
- **Script Output:** Output/return value of the script. Output messages can be written to then appear on the display. Helpful for cleaning up scripts.

Illustration: Example of the return value of a script

- **Documents for programmers:** Links (in blue) are shown in the player for viewing purposes (Internet connection required):
  - **LUA:** Manual of the LUA programming language
  - **Device:** LUA library of the MSMP (appendix for programmers). The objects, functions, and parameters of the library are explained here. Interface between LUA and the player's firmware using the **JSON protocol**.
  - **LuaSocket:** Documentation of the **LuaSocket** library.
  - **cjson:** Documentation of the **LUA CJSON** module. This offers JSON support for LUA.

The following chapters show some examples of simple scripts. Remember that the script is a very powerful tool for programming and personalising the MSMP, because a single script can perform different tasks, which can be linked together and which depend on different circumstances; it can thus introduce genuine logic and intelligence into your workflow.

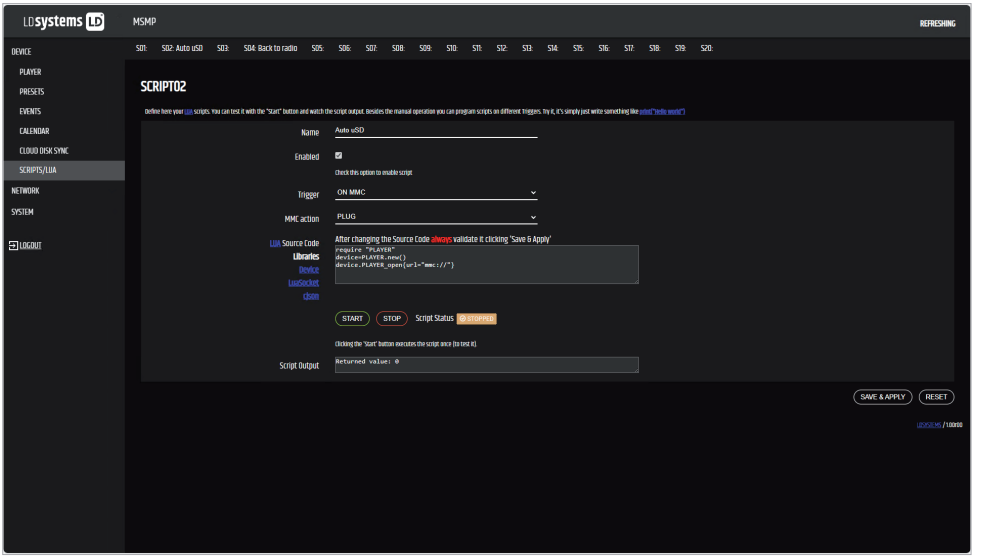
The only limit is your imagination!

7.2.7.1 EXAMPLE SCRIPT02:

Automatic playback of the content of the uSD card as soon as it is inserted

There are applications in which the local storage medium changes depending on the user. In a gym, for example, each trainer changes the music according to their specific training session. In other words, each trainer connects their own USB storage device or uSD card to play their specific audio content. This could be automated so that users simply insert their storage medium into the player, at which point playback begins automatically. This would prevent improper handling and/or save the user from having to read the operating instructions.

In the following example, a script is used to automate the playback of the content of a uSD card as soon as it is inserted. Such a script could also be written for the automatic playback of the content of a USB storage medium, in which case you would only have to change the trigger and the URL.



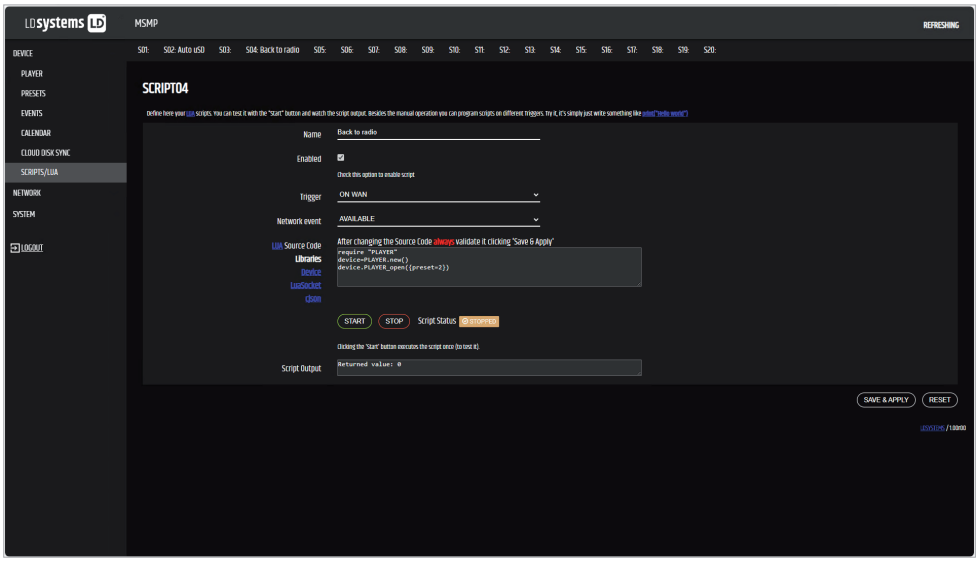
- require “PLAYER”
- ep = PLAYER.new()
- ep.PLAYER_open{url="mmc://"}

7.2.7.2 EXAMPLE SCRIPT04:

Playing Internet radio after restoring the Internet connection

The following script accesses a preset as soon as an available Internet connection (WAN) is detected. This can be interesting when used with the silence detection event:

The player is playing an Internet radio programme and suddenly loses the connection to the radio station due to a network problem. After a few seconds without audio playback, the silence detection event is activated, and the player starts playing the content of the uSD card (backup music). However, playback of the previously broadcast radio programme should continue automatically as soon as the Internet connection is restored.



- require “PLAYER”
- ep = PLAYER.new()
- ep.PLAYER_open({preset=2})

7.3 NETWORK

The Ethernet and Wi-Fi interfaces can be configured here.

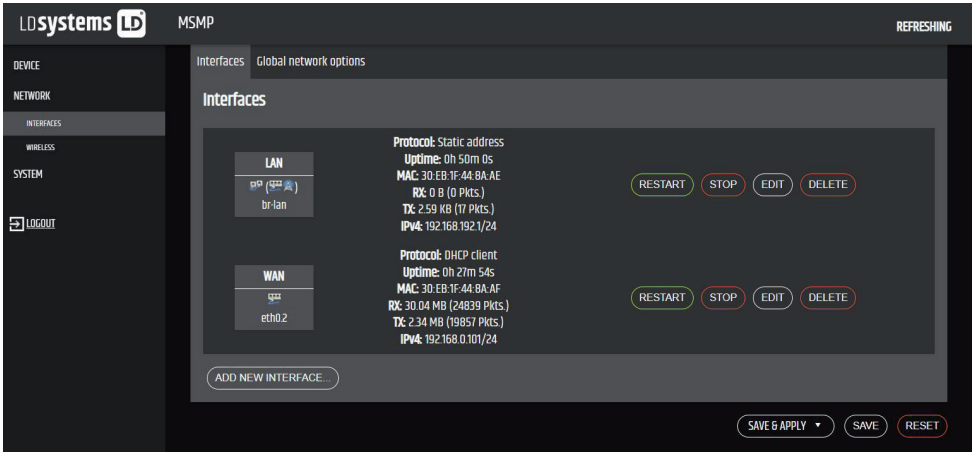


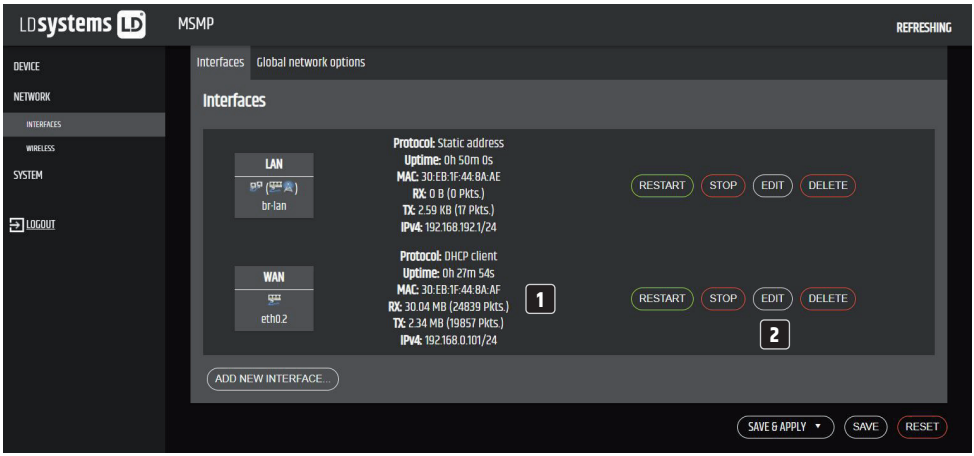
Illustration: Network, interfaces

- **Interfaces:** Editing of parameters for connection via cable, Ethernet port RJ-45
- **Wireless:** Setting parameters for wireless connection, Wi-Fi interface

Further information on all network parameters can be found under this link
https://openwrt.org/docs/guide-user/network/start

7.3.1 CONNECTION VIA RJ-45 CABLE

The MSMP is standard equipped with automatic network addressing (DHCP). You can switch to manual addressing (editing the network parameters) in the **Network/Interfaces** menu of the web application.



1 Network data: Query the parameters and data of the network
- **Protocol:** DHCP client / static address
- **Uptime:** Connection duration
- **MAC:** MAC address of the device
- **RX:** Amount of data received
- **TX:** Amount of data sent
- **IPv4:** IP address of the device

Edit **2 network parameters**: Access to the configuration of the Ethernet interface

Click on **EDIT** to access the configuration of the Ethernet interface.

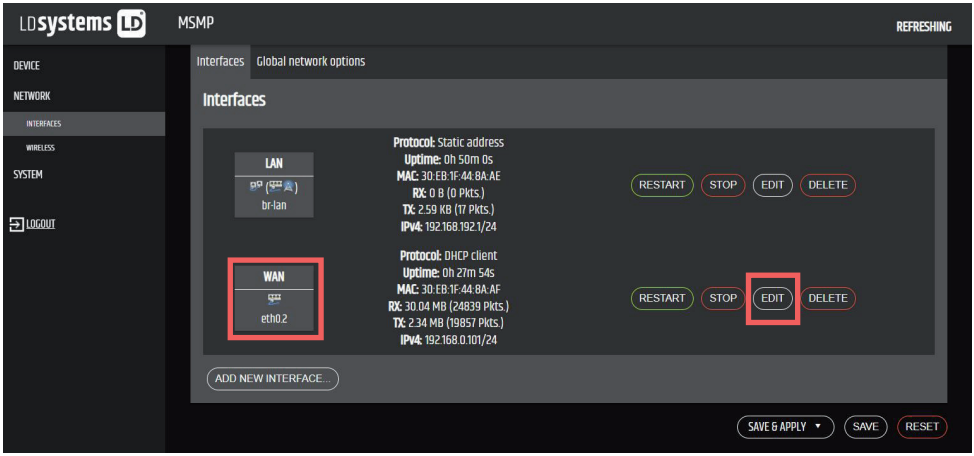


Illustration: Access to the network configuration

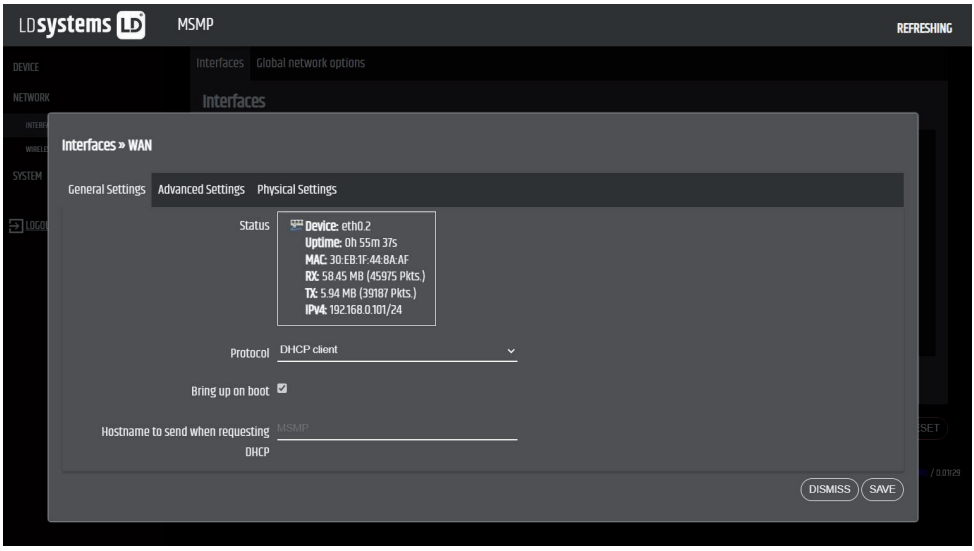
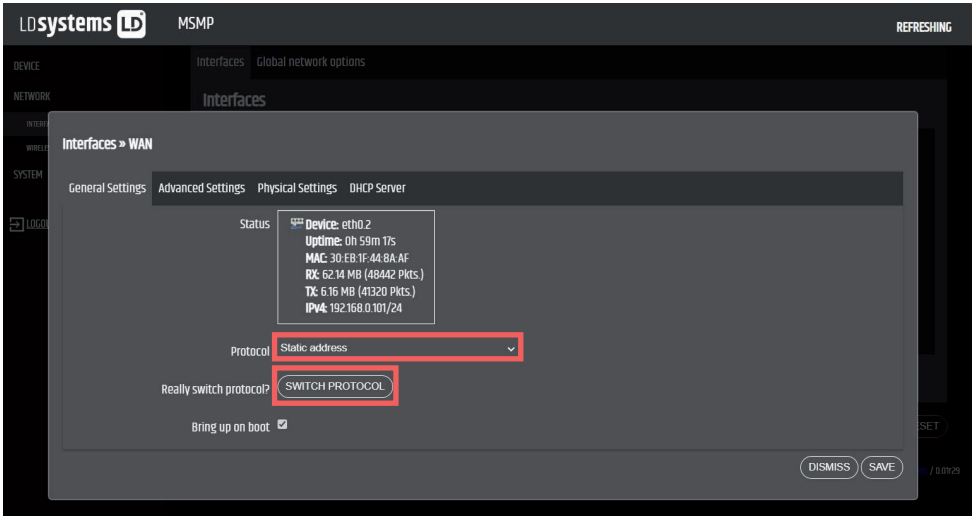
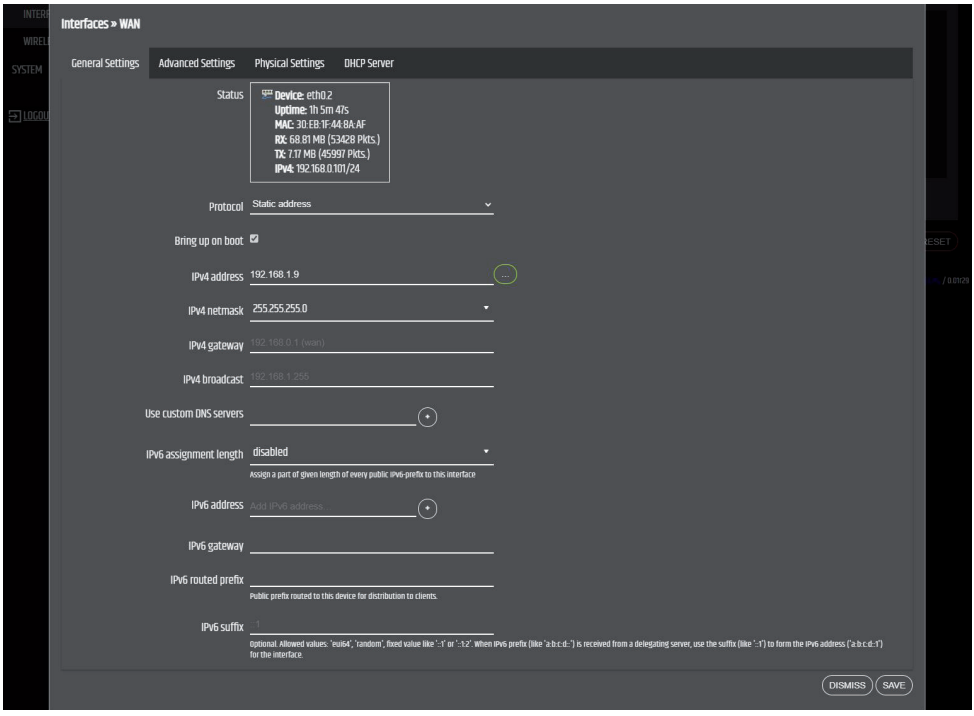


Illustration: Editing the network parameters

Select the **Static address** mode and click on **SWITCH PROTOCOL** to be able to carry out the network addressing manually.



Configure the network parameters according to your infrastructure:



- **IPv4 address:** Network address of the device
- **IPv4 netmask:** Subnet template
- **IPv4:** Gateway (switch/router with Internet access)
- **DNS1:** Domain Name System 1 (optional)
- **DNS2:** Domain Name System 2 (optional)

Save the changes on the editing page and apply them on the **Network/Interfaces** page.

7.3.2 WIRELESS POINT-TO-POINT CONNECTION

The MSMP can establish a wireless point-to-point connection to a device with a Wi-Fi interface (PC, smartphone, tablet, etc.) to access the web application or to send streaming content viaAirPlay/DLNA.

Ensure that the wireless connection is enabled and the device is configured as a MASTER (access point).

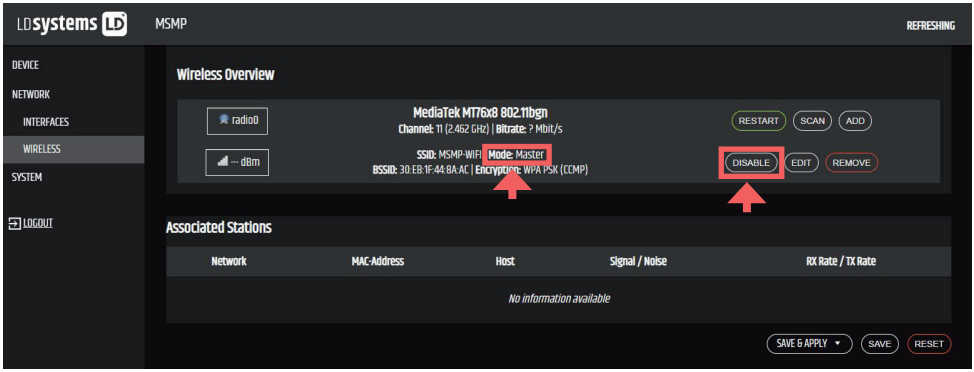


Figure: Configuration of the Wi-Fi interface

In your device's Wi-Fi settings, select the Wi-Fi network (factory setting: MSMP-WI-FI) and enter the password (LDPlayerAP). A wireless point-to-point connection will be established.

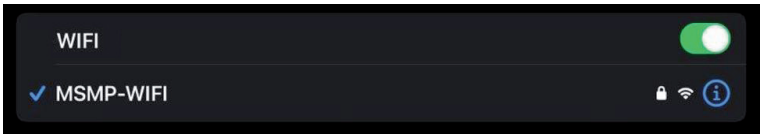


Illustration: Wi-Fi settings of a tablet

If you have more than one LD Systems playback device installed in the same system or if you simply want to personalise the network visualisation parameters, we recommend that you change the SSID and password of the Wi-Fi network of your device(s). To do this, click on the **"Edit"** option and set the Wi-Fi network parameters according to your requirements. Then save and apply the changes.

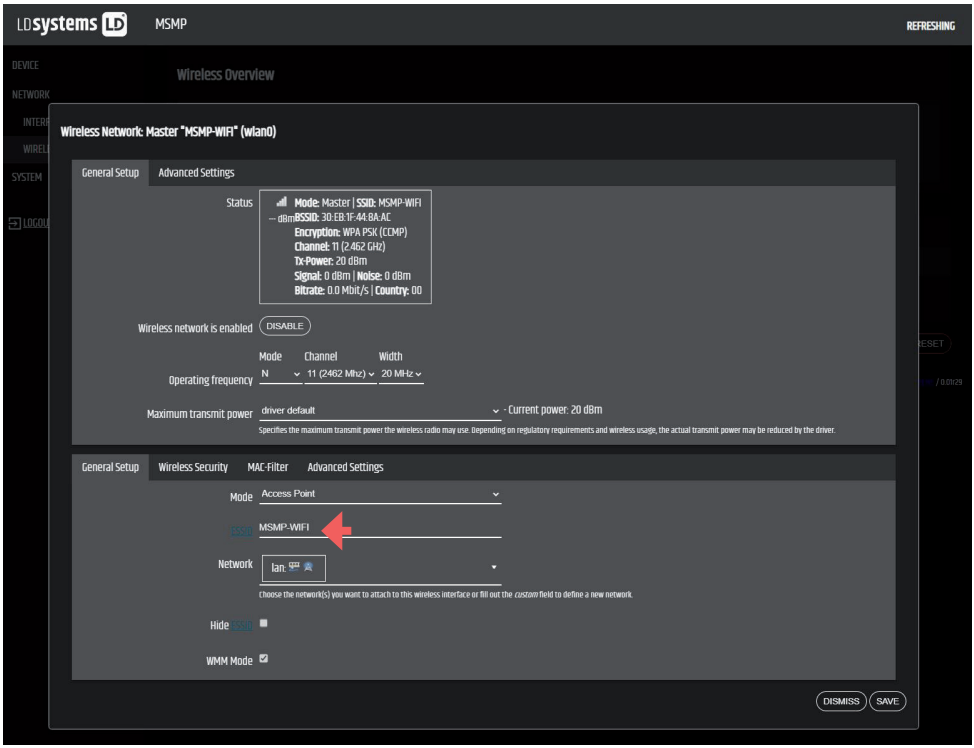


Illustration: Editing the SSID of the Wi-Fi network

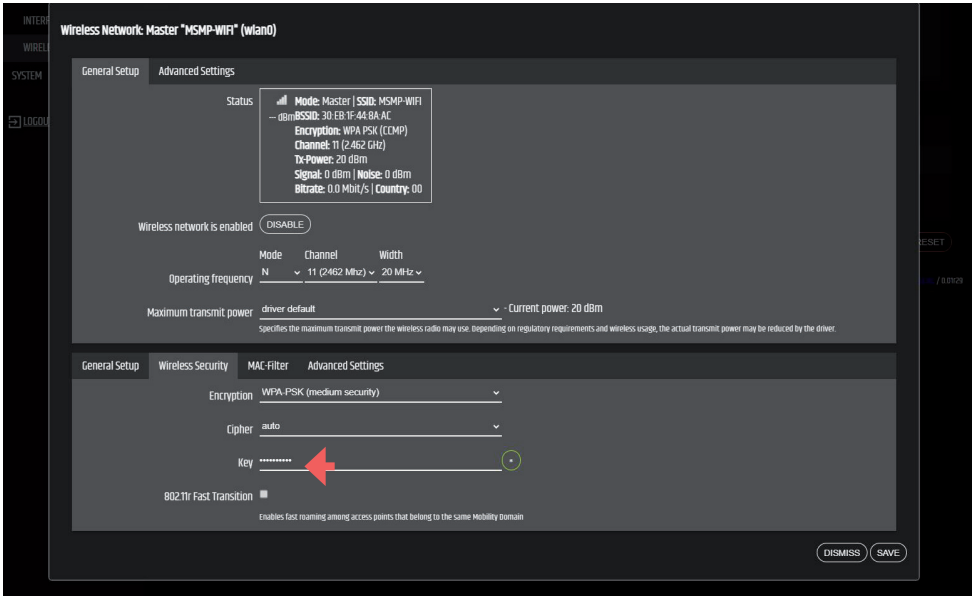
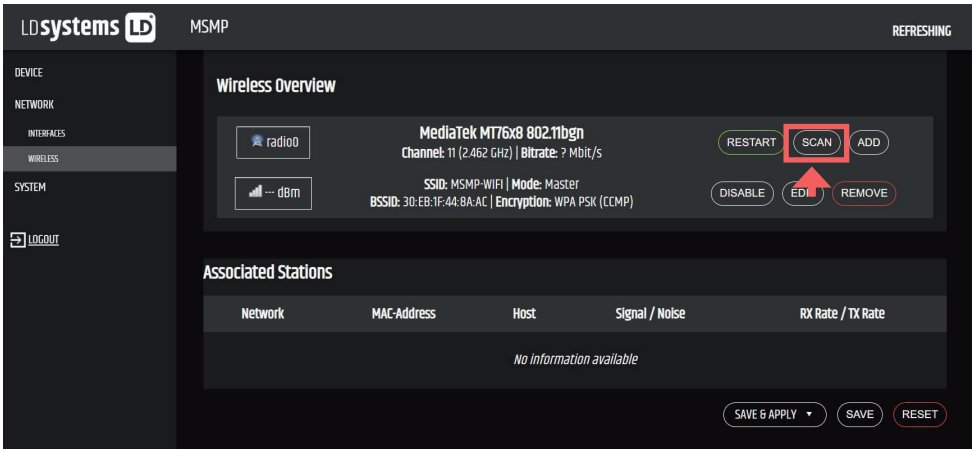


Illustration: Edit Wi-Fi password

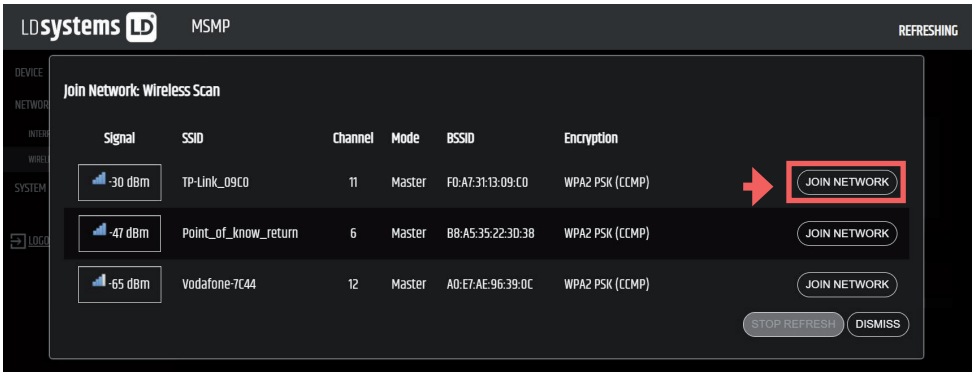
7.3.3 CONNECTION TO A WI-FI NETWORK

The MSMP can be connected to the Internet via a private Wi-Fi network to access network addresses, such as Internet radio stations or external file synchronisation services.
To do this, click on SCAN on the configuration page of the Wi-Fi interface.

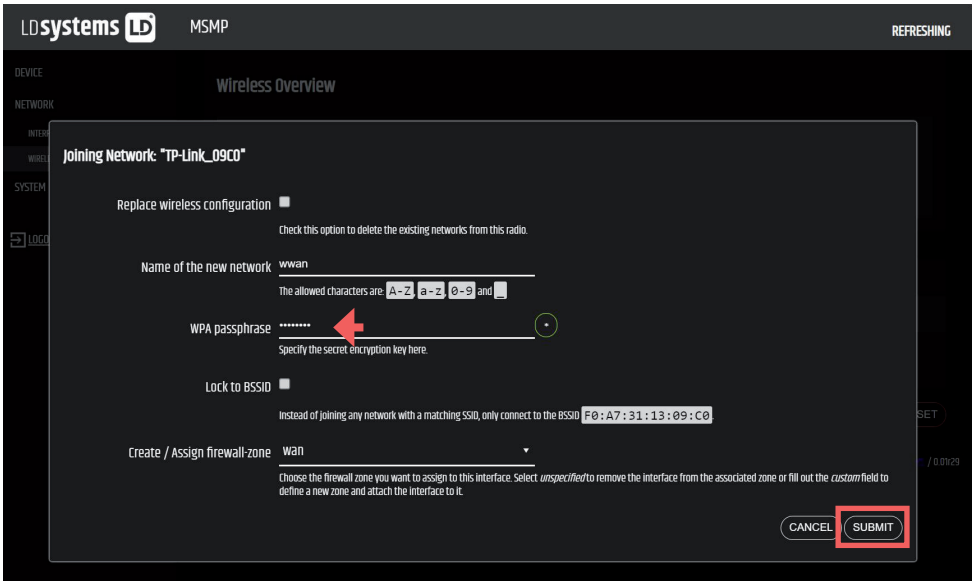


Select your private Wi-Fi network.

The MSMP is only compatible with 2.4GHz wireless networks.

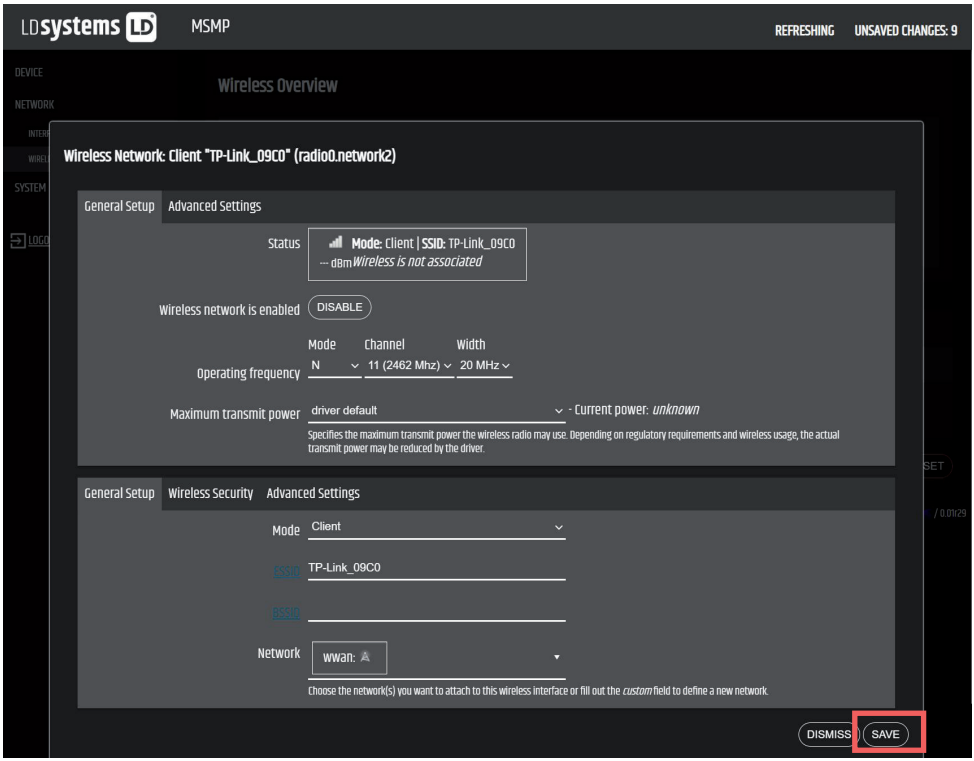


Enter the password of the Wi-Fi network you want to connect to and then click **SUBMIT**.

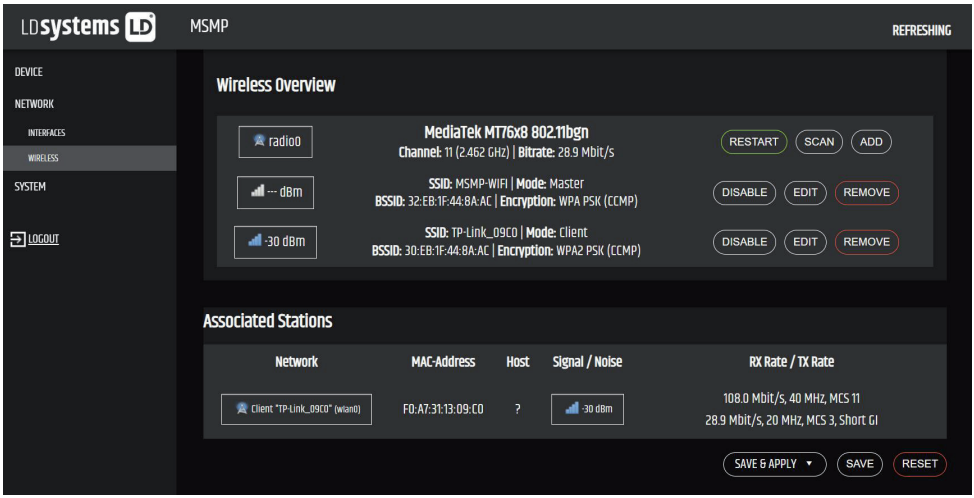


The Wi-Fi network settings are now displayed. Click **SAVE** if you do not want to make any further changes.

The mode of operation has now been changed to client mode.



A wireless connection to your private Wi-Fi network is established.



7.4 SYSTEM

Administrator settings can be made in the SYSTEM settings menu, e.g. changing the device name or password for accessing the web application, encrypting local media, resetting to factory settings, saving backup copies, updating the firmware, etc.

7.4.1 NAME AND TIME

Setting the device name and synchronising the time.

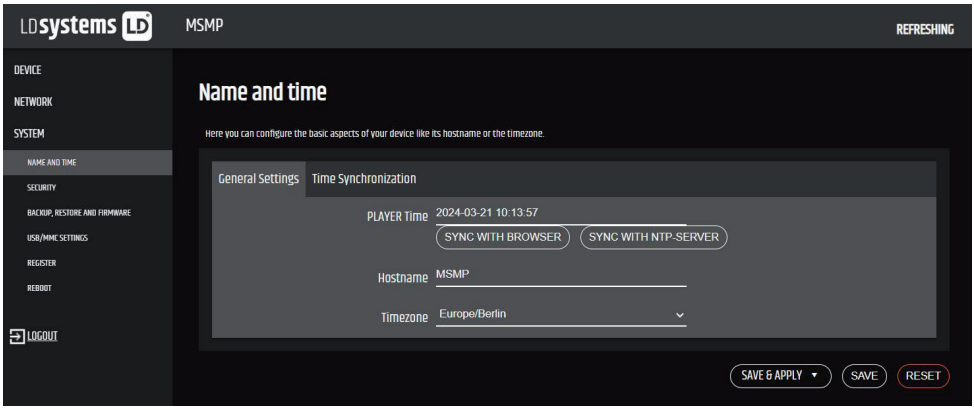


Illustration: Name and Time, General settings

7.4.1.1 GENERAL SETTINGS

- **PLAYER Time:** Setting the time of the player. This can be synchronised with the browser time **(Sync with Browser)** and/or via NTP servers; this is recommended if you have an Internet connection and work with calendar events.

If you synchronise via an NTP server, you no longer need to worry about the annoying changeover to summer or winter time.

- **Hostname:** Name of the device. The player is displayed under this name for other services such as AirPlay or mDNS. This name "MSMP" is designated ex works. To do this, enter the device name followed by ".local/" in your browser's search bar to access the device's web GUI, i.e. msmp.local/ by default.
- **Timezone:** Setting the time zone. If you are working with calendar events, it is important to properly set the time zone.

7.4.1.2 TIME SYNCHRONISATION

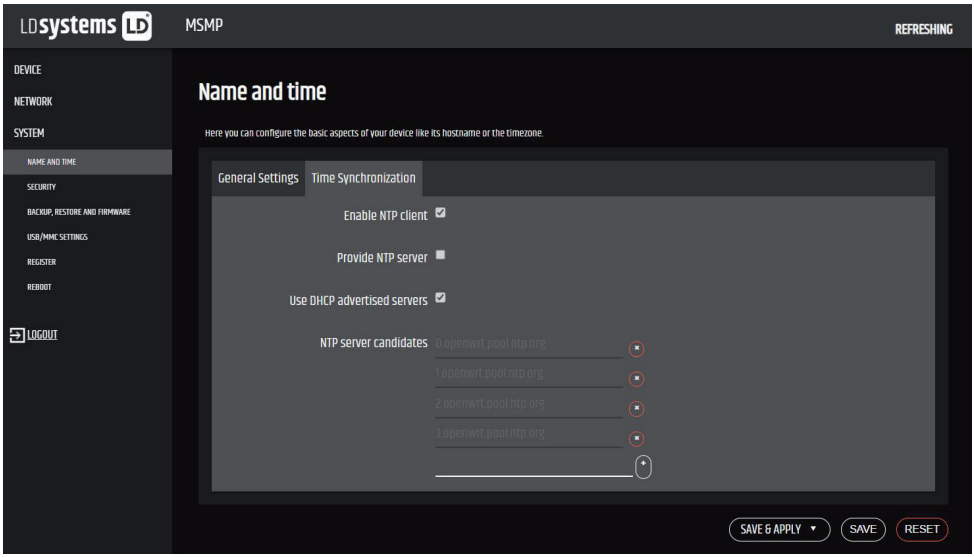


Illustration: Name and time, time synchronisation

This option allows you to enable or disable synchronisation of the time with an NTP server. In addition, the servers that are eligible for synchronisation can be managed here.

The MSMP is equipped with an internal clock, which ensures that the time setting is not lost if the power supply or the connection to the NTP server is interrupted. However, please bear in mind that this clock works with an accuracy of ±1 minute/month.

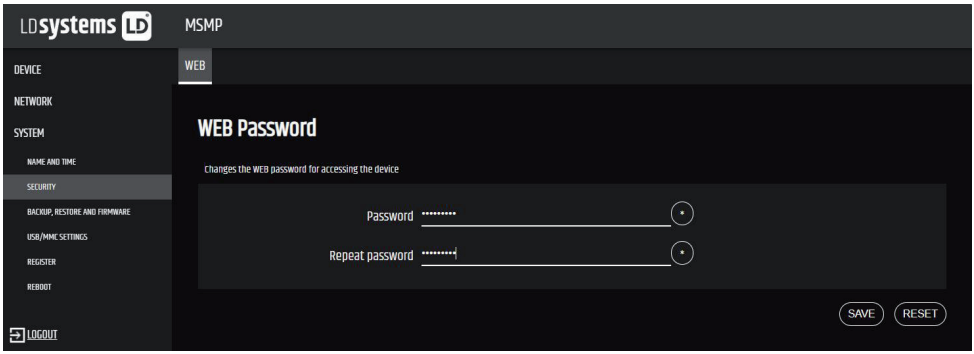
7.4.2 SECURITY

Settings can be made on this page to prevent the player from being manipulated by unauthorised individuals.

7.4.2.1 WEB PASSWORD

Password for accessing the web application. Default setting **ldsystems**.

The user is always **root;** this cannot be changed.



7.4.3 BACKUP, RESTORE, AND FIRMWARE

Management of the backup copies of your device and restoration of the configuration files, as well as updating the firmware version.

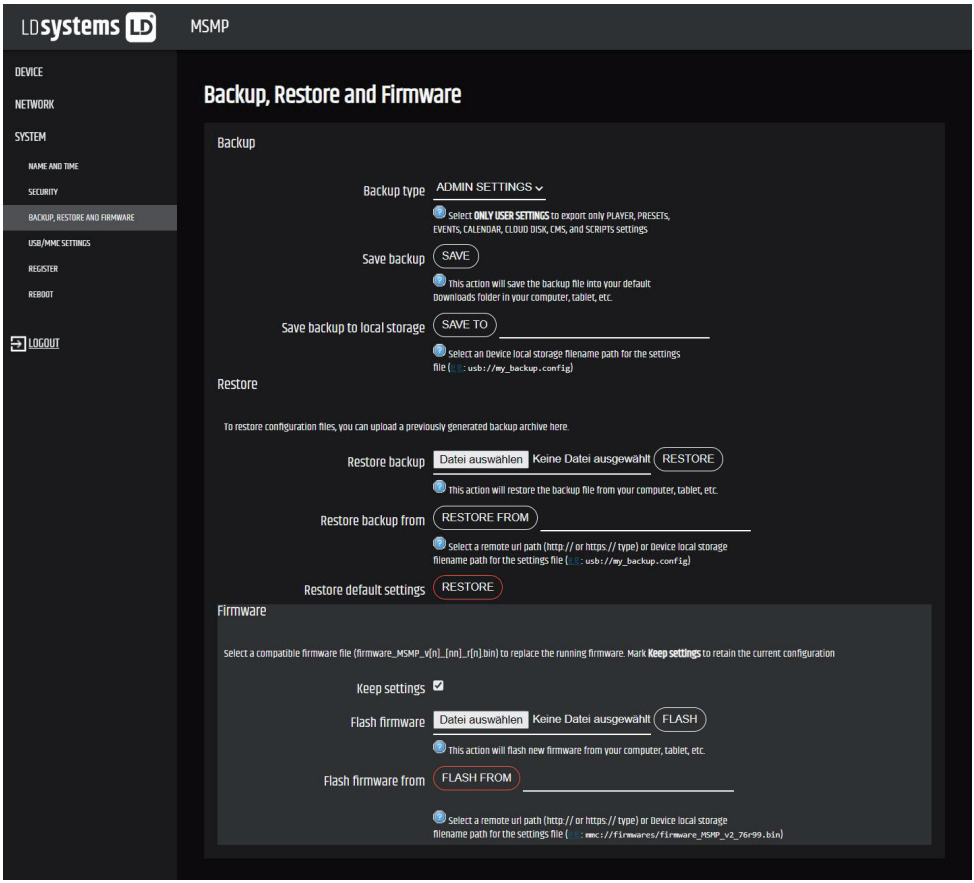


Figure: System. Backup, Restore, and Firmware

7.4.3.1 BACKUP COPIES (BACKUP)

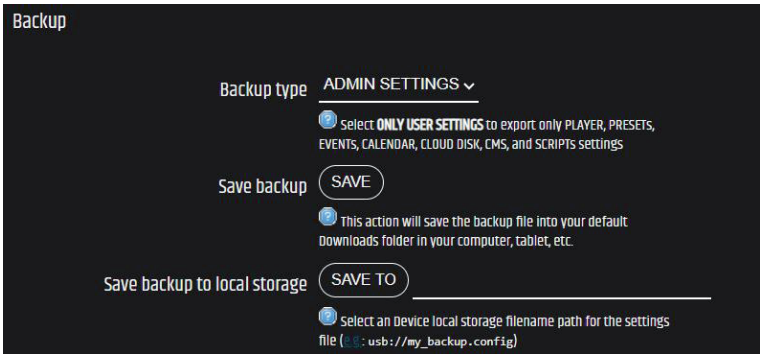


Illustration: Backup

- **Backup type:** Type of backup copy
  - **ADMIN SETTINGS:** All settings are saved (administrator and user).
  - **USER SETTINGS:** Only the user settings are saved**.**

	ADMIN SETTINGS	USER SETTINGS
Player	✔	✔
Presets	✔	✔
Calendars	✔	✔
Events	✔	✔
Scripts	✔	✔
Store and Forward	✔	X
Network Settings	✔	X
System: Name, Time, and NTP	✔	X
Player Profile	✔	X
Encryption	✔	X
Web password	✔	X

Illustration: Types of backup copies or configuration files

- **Save Backup:** Creates a backup copy that is saved in the download folder configured in your browser
- **Save backup to local storage:** Creates a backup copy that is saved under the entered name at the entered local storage address, for example, "mmc://backups/copia1.config" (example of a folder on a uSD card inserted in the player).

7.4.3.2 RESTORING BACKUP COPIES AND FACTORY SETTINGS (RESTORE)

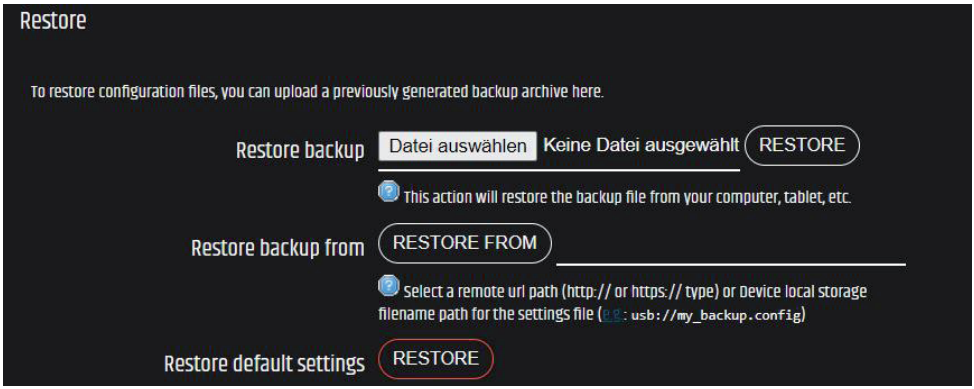


Illustration: Restore backup

- **Restore backup:** Restores a configuration file (or backup copy) saved on your computer, tablet, server, etc.
- **Restore backup from:** Restores a configuration file saved on one of the player's storage media, i.e. USB or uSD. A file saved on a remote storage location can also be restored (URL address).
- **Restore default settings:** Resets the device to its factory settings, resulting in the loss of all administrator and user settings.

If you are doing encryption work, the content saved on the storage medium cannot be restored when resetting to factory settings or when restoring an administrator file.

7.4.3.3 FIRMWARE UPDATE (FIRMWARE)

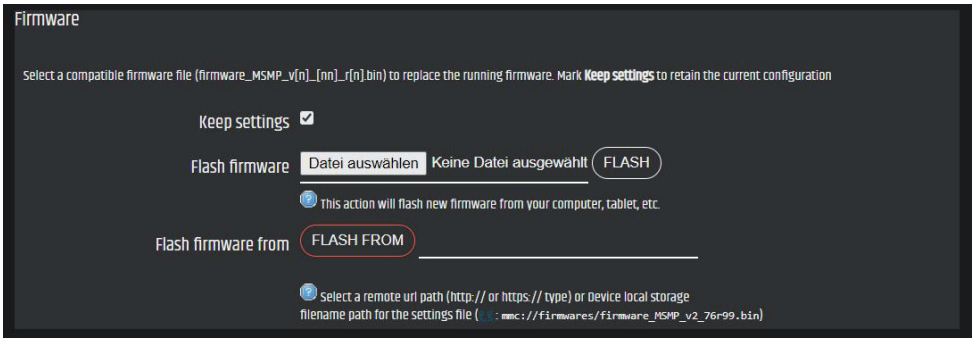


Illustration: Firmware

- **Keep Settings:** The device's current configuration is kept. If you want to reset the device to its factory settings after updating the firmware, you must deselect this option; it is activated by default.
- **Flash firmware:** Update using a firmware file saved on your computer, tablet, server, etc.
- **Flash firmware from:** Update using a firmware file saved on one of the device's storage media, i.e. USB or uSD. A file stored on a remote device can also be used via a URL address.

7.4.4 USB/MMC SETTINGS

Used to display the storage space used in the local storage media and to manage the encryption function if there is a need to secure the musical content stored on the uSD card, USB device, or similar for reasons of security or data protection. This allows for data to be protected if the local storage medium were to be stolen, as it can only be read by the device that encrypted it.

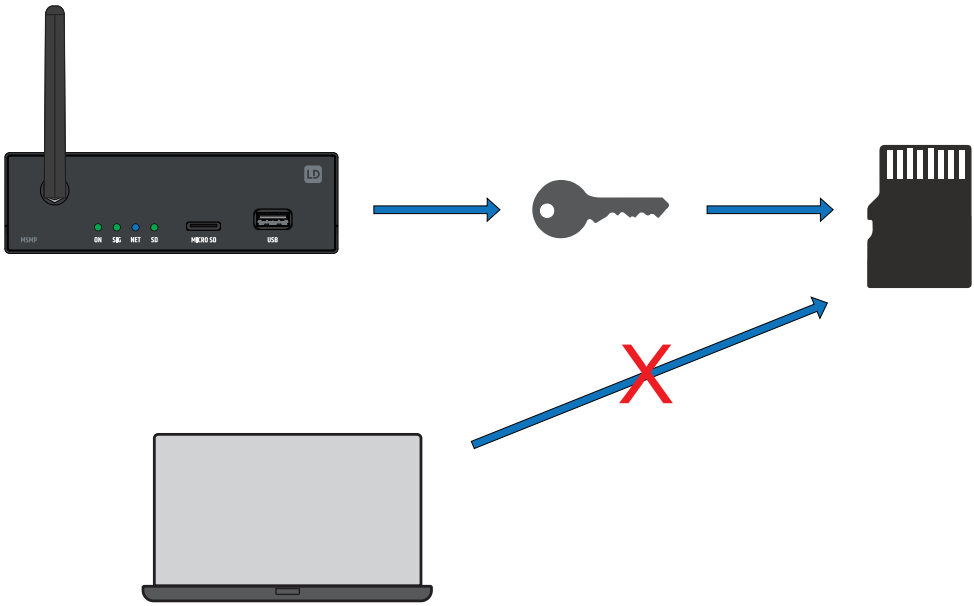


Figure: Encryption concept

The encryption concept works as follows:

1. The storage medium is formatted by the device during encryption. This process **deletesthe entire memory content** of the uSD card or USB device.
2. The process may take a few minutes.
3. Once the process is complete, the text "**NO FILES**" is displayed under "Disc usage", which means that **formatting has been successfully** completed and there are no more audio files on the external medium.
4. The external medium is now ready to download content using the "**Cloud disk sync**"**– Store and Forward (rsync)** tool.

If this function is disabled, the process described above must be restarted to re-enable it.

Please note the following **considerations** regarding the encryption function:

- The encryption process is **destructive,** as formatting the external medium deletes all files stored on it.
- If this function is enabled, **any other external medium** (uSD or USB) that is inserted into the corresponding slot and **does not contain**the encryption keys will be encrypted, i.e. all files stored on it will be deleted. As a result, only content that is stored on a medium encrypted by the player itself can be played.
- The external storage medium **cannot be read by any other device** (this also applies to other MSMPs) that does not have the encryption codes.
- The content can be read by the device that has encrypted it, **provided that the encryption option is not changed**. This means that as soon as the encryption function is blocked, it is no longer active on the player, and it can therefore read any external storage medium. However, it loses the codes for external media that were previously encrypted and can therefore no longer play their content.

It is a **tool that can be used with another tool to synchronise content: Store and Forward (rsync)**. If the external storage medium is encrypted, it cannot be read or written to (by copying content) by any device, e.g. a computer. This means that the only device that can copy content from this medium is the player that has encrypted it. The "Store and Forward" (rsync) tool makes this possible.

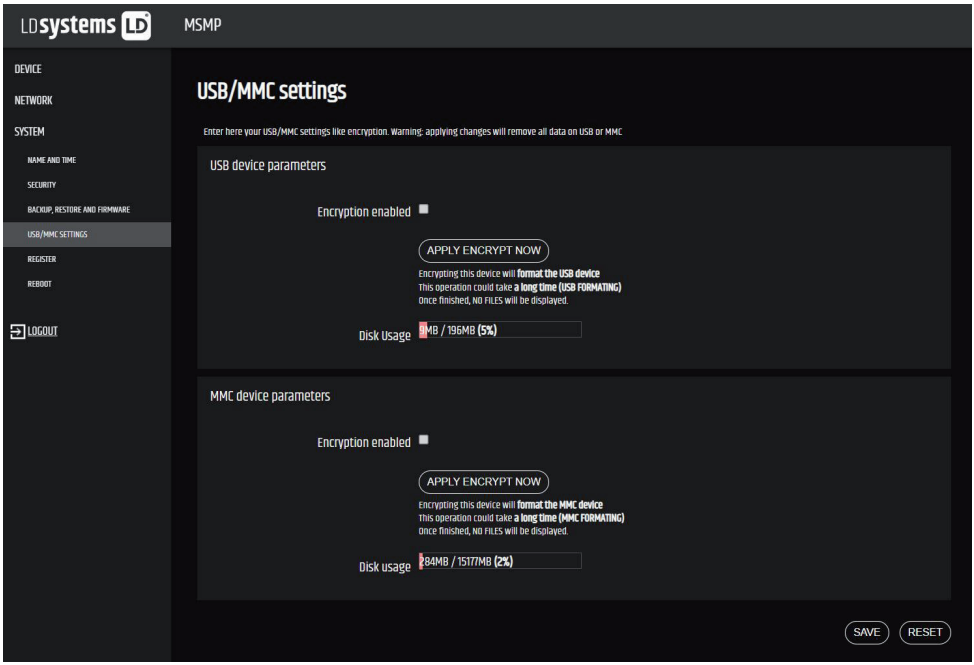


Illustration: USB/MMC Settings

- **Encryption enabled:** Enables or disables encryption of the USB or uSD storage medium. If the activation is saved, the player encrypts the storage medium the next time it is inserted into the device or when the device is restarted.

- **Apply Encrypt now:** The storage medium is encrypted immediately.
- **Disk Usage:** Storage capacity of the medium (MB) and used storage space (%) on the uSD card or USB device. If no storage medium is found, the message “NO DISK” appears.

7.4.5 REGISTER

The **log file(REGISTER**) makes **detailed monitoring of the** player's activities possible. This information can be helpful for troubleshooting, tracking the device's activities, checking correct programming, etc.

The **log lines** contain information about the actions performed by the player, as well as errors that have occurred and/or messages that have been issued, in each case with the time (when the various events occurred). A list of the log lines reported by the device is provided on the “Tab” page.

A device's log file is updated daily and with every restart. This deletes the previous log lines. However, a copy of the log file can be saved on a local storage medium every day. This allows the user to view the recordings for several days.

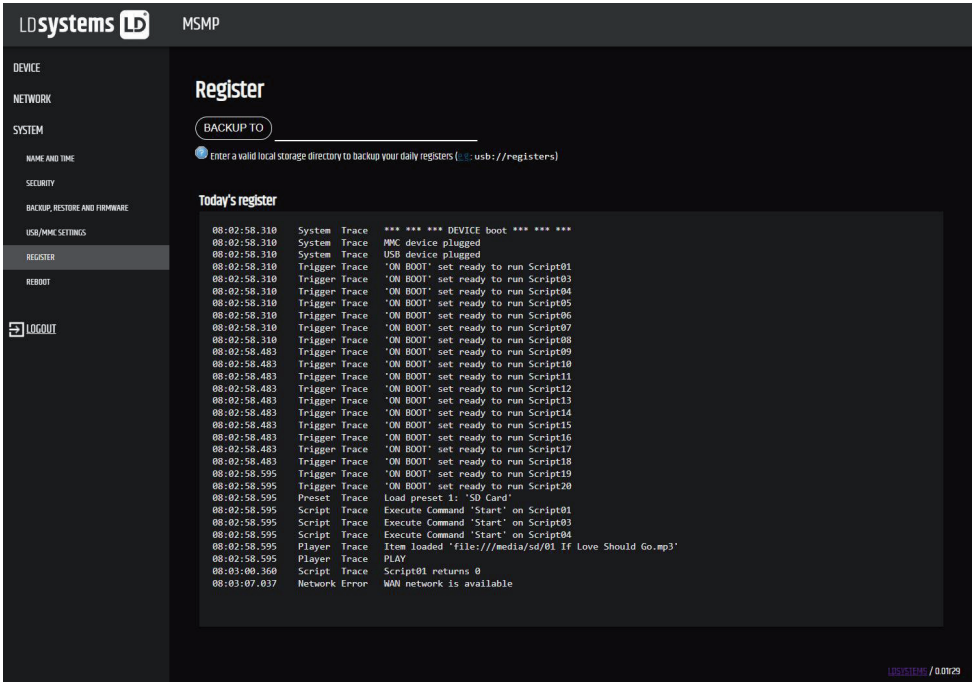


Illustration: Register

- **Backup to:** Enables daily saving of copies of the log file on a local storage medium. The path must be specified for this (e.g. “**usb://registers**”).

7.4.6 REBOOT

This page allows you to restart the player from the web application. Click on **PERFORM REBOOT** to force the device to restart.

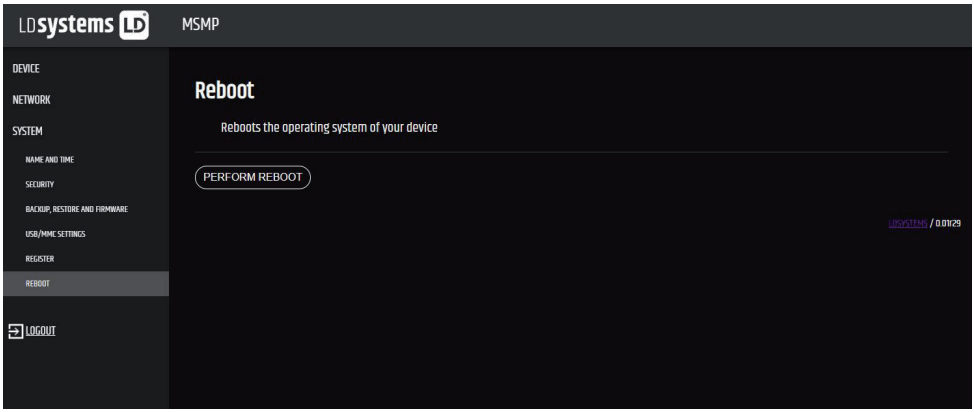


Illustration: Reboot

7.5 CONFIGURATION OF AN SSH SERVER FOR STORE AND FORWARD (RSYNC)

The MSMP's **Cloud Disk Sync, Store and Forward** module enables the device to **download external audio content to local storage media (USB/uSD). If it is activated, it carries out a daily check of a remote location where the audio content is hosted, compares it with the current content of the local storage media (USB/uSD)** and, if necessary (if differences are detected), synchronises the local content so that it becomes an exact copy of the external content. This is a secure method of playing content stored on a local storage medium during the operating hours of the device (during the day) without having to take the risks of receiving streaming in real time.

The Store and Forward service for synchronising remotely stored musical content uses the rsync (Remote Sync) tool for this purpose.

These instructions show an example of how to configure an SSH server using Linux (Ubuntu Desktop 18.04.2 LTS). It is important that all devices, servers, and clients are connected to the same network (LAN/intranet).

Important note: For a cloud-based configuration of **Store and Forward**, a virtual private server (VPS) would have to be rented in order to obtain a public IP address and access the SSH server via the Internet.

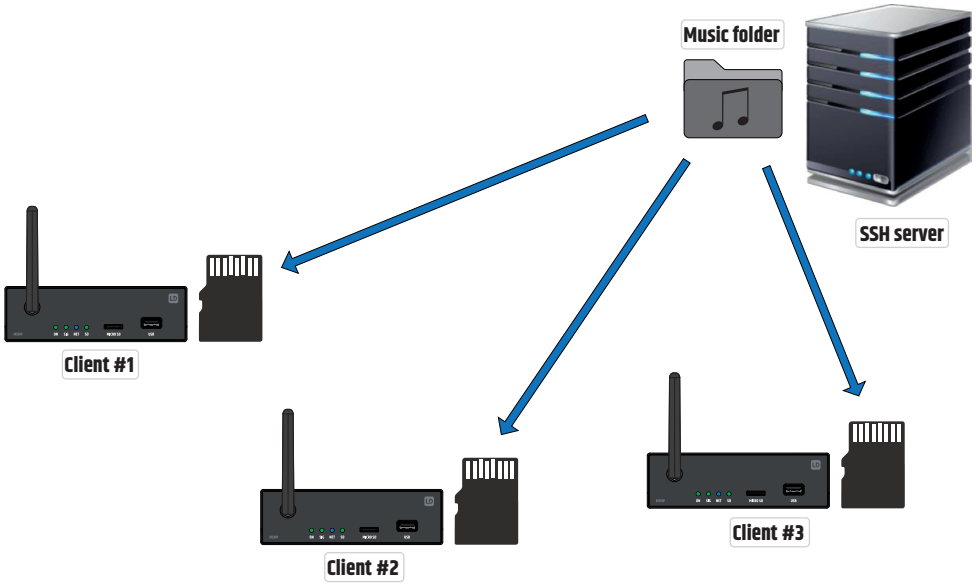


Figure: SGF synchronisation

7.5.1 CONTENT GROUPS

A content group is a group of devices that synchronise the same audio content using the Store and Forward service. A separate user must be created for each content group. A device that has been assigned to a specific content group can thus only access the content assigned to this group and not other content. This procedure is for safety reasons. Each content group manages its own access code to access the content assigned to it on the server, where all the music, announcements, voice messages, etc. are hosted.

Several connections can be assigned to each content group or user at the same time. The maximum possible number of simultaneous connections depends on the hardware performance (server).

This allows us to create as many content groups or users in Linux as we want to manage content (e.g. music folders).

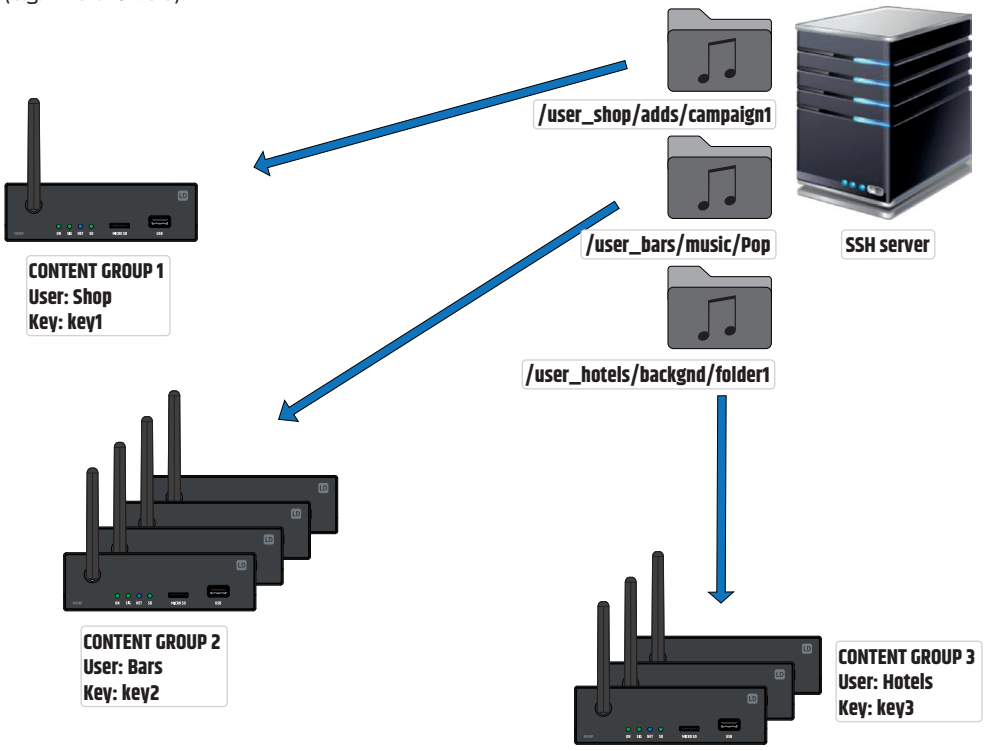


Illustration: Content groups

For easy configuration, it is possible to create just one user so that all devices can access their content with the same user name and key. The security level is skipped in this configuration. An experienced user could configure **Store and Forward** using the player's built-in web server (by changing the assigned folder) to access any content on the SSH server since the key is known.

For professional applications where an SSH server hosts content for different companies, creating a user for each content group is recommended. However, if the end user creates their own content, a single user is sufficient.

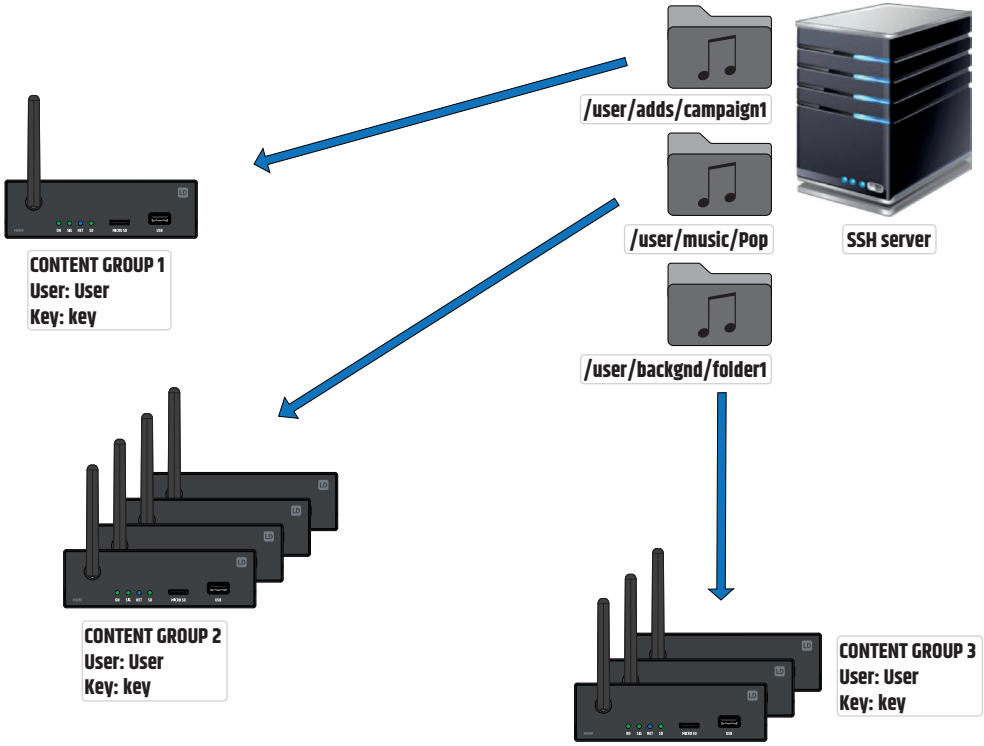


Illustration: Only one user

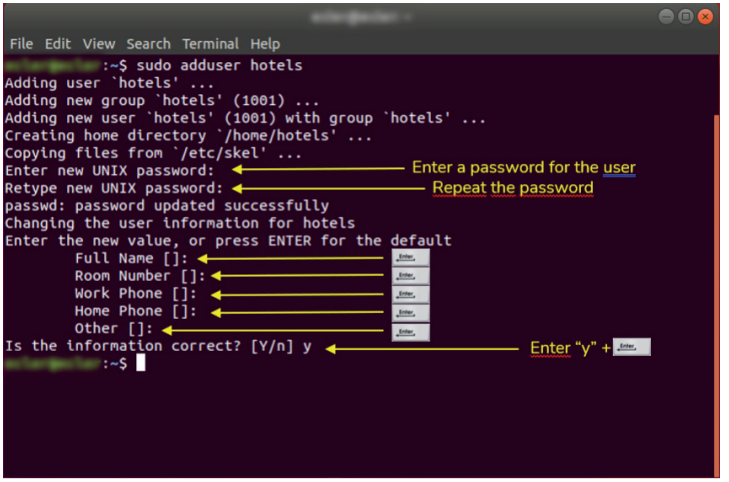
7.5.2 INSTALLING SSH UNDER LINUX

Firstly, the SSH package must be installed under Linux. Open a terminal and enter the following: **sudo apt-get install ssh**

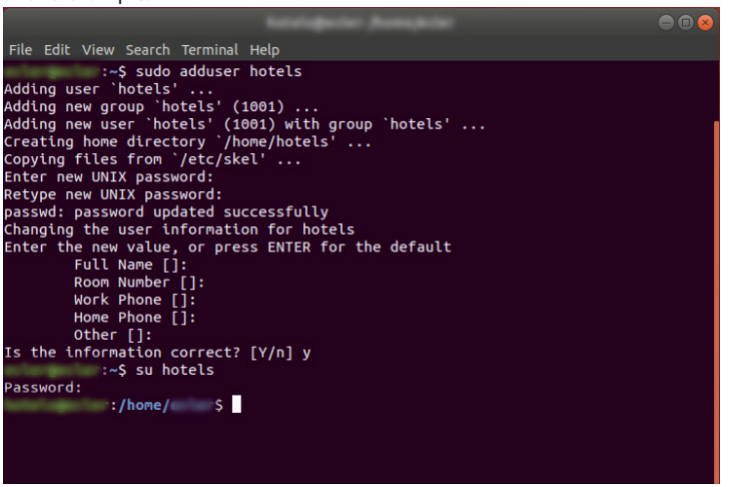
You can open a terminal with the following shortcut: {ctrl**+ alt + T}**.

7.5.3 CREATING USERS UNDER LINUX

As many users are created as there are content groups to manage.
To add a new user, enter the following: **sudo adduser <new_user_name&gt**
In this case, **<new_user_name>** stands for the username that you want to give to the content group, for example: **sudo adduser hotels**

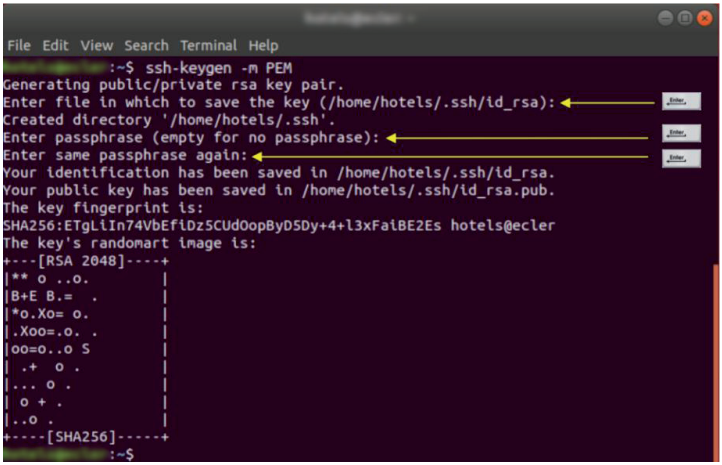


Now log in as the new user: **su <user_name&gt**
and enter the password you set in the previous step.
In this example:



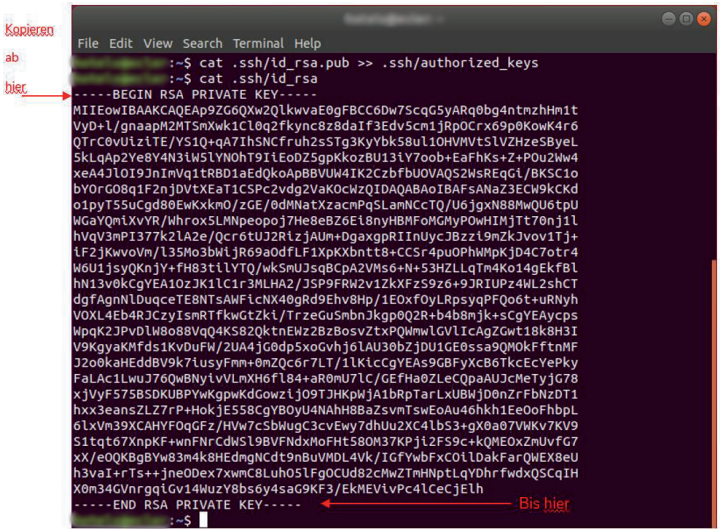
7.5.4 GENERATING THE SSH KEY

Before creating the SSH keys, you must go to the new user's home folder with: **cd**
Then use the following command to create the key pair and click Enter for each question that appears:
ssh-keygen -m PEM



Add the public keys to the authorised keys with the following command: **cat .ssh/id_rsa.pub >> .ssh/authorized_keys**

Display the private key that you need to enter on the Store and Forward configuration page of the player: **cat .ssh/id_rsa**

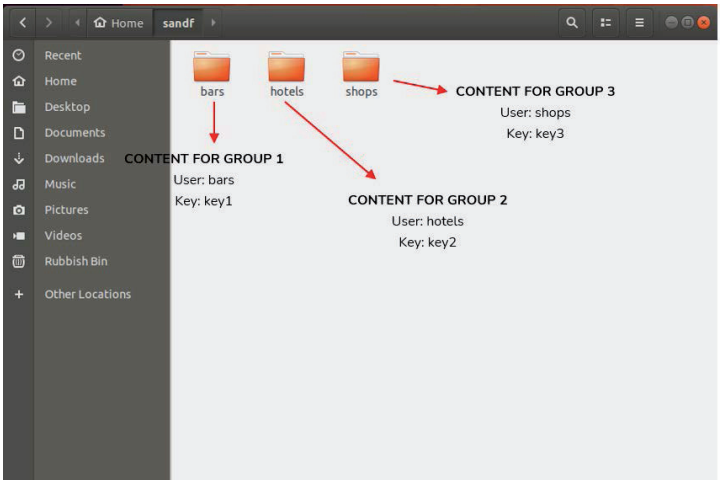


7.5.5 ADDING AUDIO CONTENT TO THE SSH SERVER

The next step is to store the correct audio content on the SSH server for each specific user or content group. A folder is thus created in the root directory of each content group: **sudo cp -r <path_with_content> <path_to_place_it&gt**

In this example, the audio content is copied to the following directory:
sudo cp -r /home/ldsystems/sandf/hotels /home/hotels

Please note that the entire audio content of all content groups or users is stored in the /home/ldsystems/sandf/ directory and organised in different folders.

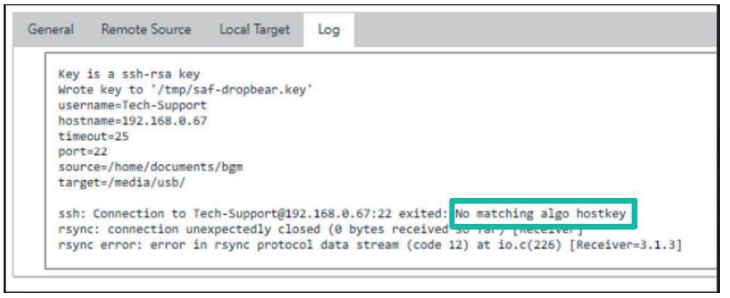


Copy the newly created directory **/home/hotels/hotels**. This is the folder in which the audio content is stored on the host and which must be copied to the MSMP's S&F configuration page.

7.5.6 ADAPTING THE SSH KEYS TO THE LATEST UBUNTU VERSION

Newer Linux versions have made the RSA algorithms used by PLAYERs outdated.

PLAYER Store & Forward LOG displays an error message as follows:

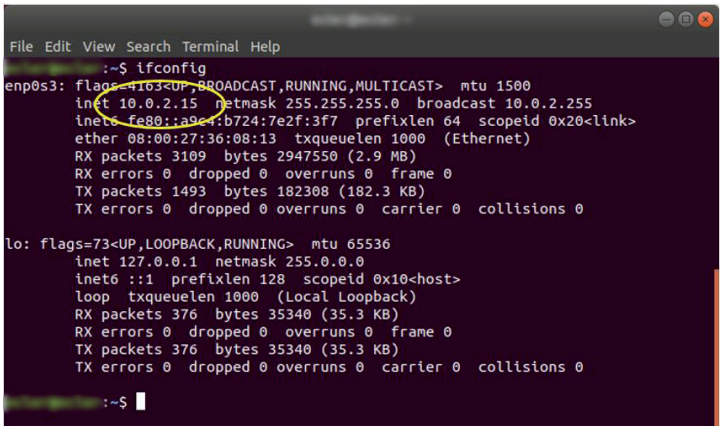


For this reason, the server configuration must be changed so that PLAYER RSA can be executed.
To solve this quickly, we recommend that you use the following command in the server terminal:
sudo sh -c 'echo "HostKeyAlgorithms +ssh-rsa" >> /etc/ssh/sshd_config'
sudo sh -c ‚echo „PubkeyAcceptedAlgorithms=+ssh-rsa“ >> /etc/ssh/sshd_config‘
sudo systemctl restart sshd

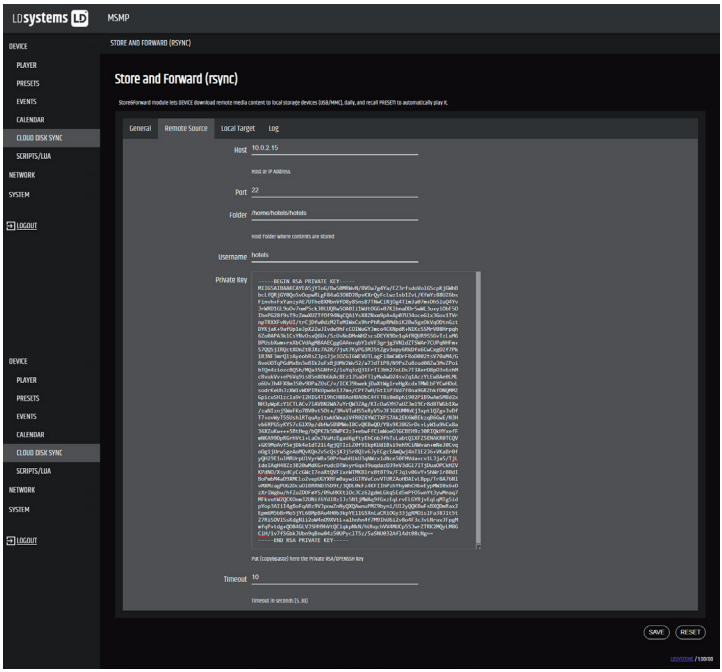
7.5.7 CONFIGURING THE REMOTE SOURCE ON THE PLAYER

Finally, the remote source (SSH server) can be configured in the S&F application.

- **Host:** The IP address of the SSH server. To check, enter the following in the terminal: **ifconfig**



- **Port:** Port of the SSH server. By default 22.
- **Folder:** Directory on the SSH server with the audio content to be synchronised
- **Username:** Username or name of the content group
- **Private key:** The key generated for the user or content group



This configuration is the same for all devices in the content group. Repeat steps 3 to 6 for each content group that you want to configure for Store and Forward.

8. CARE, MAINTENANCE, AND REPAIR

In order to ensure the long-term, proper functioning of the device, it must be regularly cleaned and, if necessary, serviced. The care and maintenance required depends on the intensity of use and the environment in which it is used.
We recommend a visual inspection before each operation. Furthermore, we recommend carrying out all the applicable service measures specified below once every 500 operating hours or, in the case of a lower intensity of use, at the latest after one year. Warranty claims may be limited should defects result from inadequate service and maintenance.

CARE (CARRIED OUT BY USER)

WARNING! Before carrying out any care and maintenance work, the power supply and, if possible, all device connections must be disconnected.

NOTE! Improper care can lead to impairment or even destruction of the device.

1. Housing surfaces must be cleaned with a clean, damp cloth. Make sure that no moisture can penetrate the device.
2. Air inlets and outlets must be regularly cleaned of dust and dirt. If compressed air is used, make sure that damage to the device is prevented (for example, fans must be blocked in this case).
3. Cables and connectors must be cleaned regularly, and dust and dirt must be removed.
4. In general, no cleaning or disinfection agents or abrasive agents may be used, as they may damage the surface finish. Solvents in particular, such as alcohol, can impair the function of housing seals.
5. Devices must generally be stored in a dry environment and protected from dust and dirt.

MAINTENANCE AND REPAIR (BY QUALIFIED PERSONNEL ONLY)

DANGER! There are live components in the device. Even after disconnecting from the mains, there may still be residual voltage in the device, e.g. due to charged capacitors.

PLEASE NOTE! There are no user-serviceable assemblies in the device.

PLEASE NOTE! Maintenance and repair work may only be carried out by specialist personnel authorised by the manufacturer. If in doubt, consult the manufacturer.

PLEASE NOTE! Improperly performed maintenance work may affect warranty claims.

9. DISPOSAL

Packaging:

1. Packaging can be fed into the reusable material cycle using the usual disposal methods.
2. Please separate the packaging in accordance with the disposal laws and recycling regulations in your country.

Device:

1. This device is subject to the European Directive on Waste Electrical and Electronic Equipment, as amended. WEEE Directive Waste Electrical and Electronic Equipment. Waste equipment and batteries do not belong in household waste. Waste equipment or batteries must be disposed of via an authorised waste disposal company or a municipal waste disposal facility. Please observe the applicable regulations in your country!
2. Observe all disposal laws applicable in your country.
3. As a private customer, you can obtain information on environmentally friendly disposal options from the seller of the product or the appropriate regional authorities.

10. MANUFACTURER'S WARRANTY

MANUFACTURER'S WARRANTY AND LIMITATION OF LIABILITY

Adam Hall GmbH, Adam-Hall-Str. 1, D-61267 Neu-Anspach / E-mail Info@adamhall.com / +49 (0)6081 / 9419-0.
Our current warranty conditions and limitation of liability can be found at:
https://cdn-shop.adamhall.com/media/pdf/MANUFACTURERS-DECLARATIONS_LD_SYSTEMS.pdf.
For service requests, please contact your distribution partner.

CE CONFORMITY

Adam Hall GmbH hereby confirm that this product meets the following guidelines (where applicable):
R&TTE (1999/5/EC) or RED (2014/53/EU) from June 2017
Low-Voltage Directive (2014/35/EU)
EMC Directive (2014/30/EU)
RoHS (2011/65/EU)
The full declaration of conformity can be found at **www.adamhall.com**.
You can also request it via **info@adamhall.com**.

EU DECLARATION OF CONFORMITY

Declarations of conformity for products covered by the LVD, EMC and RoHS directives can be requested at **info@adamhall.com**.
Declarations of conformity for products subject to the RED Directive can be found at **www.adamhall.com/compliance/**.

Subject to misprints and errors, as well as technical or other modifications!

LD systems

LD-SYSTEMS.COM

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