

USER GUIDE

ULTRA-X ViS 8K

Version 2.1

HD UTRASOFT LLC 113 Barksdale Professional Center, Newark, DE 19711



CONTENTS

I. PLAYOUT SERVER.....	3
II. PLAYOUT WEB MANAGER.....	4
III. SERVICE MONITOR.....	4
IV. PLAYOUT PLAYER.....	30

ULTRA-X ViS 8K

ULTRA-X ViS is a video processing server software for broadcasting in SD, HD, 4K, 8K standards from video files of different formats and codecs:

Supported file format: mxf, mov, mp4, mpg, avi, ts, flv, prores

Supported audio codec: raw pcm, mp2, mp3, aac

Supported video codec: mpeg2, h264, h265, vp8, vp9.

(AV1 codec requires Nvidia ampere family)

Output resolutions:

SD Video Standards: 525i59.94 NTSC, 625i50 PAL

HD Video Standards: 720p50, 720p59.94, 720p60

1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p47.95, 1080p48, 1080p50, 1080p59.94, 1080p60, 1080p95.90, 1080p96, 1080p100, 1080p119.88, 1080p120, 1080i50

2K Video Standards: 2Kp23.98 DCI, 2Kp24 DCI, 2Kp25 DCI, 2Kp29.97 DCI, 2Kp30 DCI, 2Kp47.95 DCI, 2Kp48 DCI, 2Kp50 DCI, 2Kp59.94 DCI, 2Kp60 DCI, 2Kp95.90 DCI, 2Kp96 DCI, 2Kp100 DCI, 2Kp119.88 DCI, 2Kp120 DCI

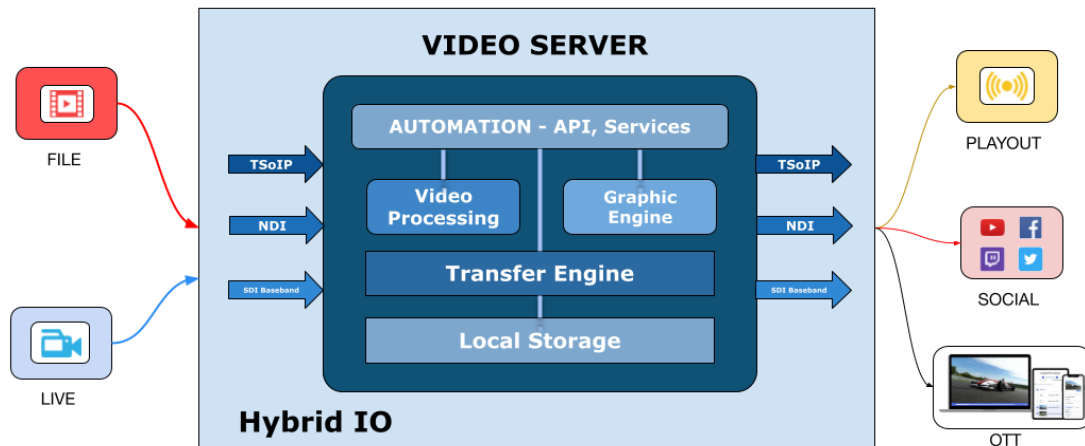
Ultra HD Video Standards: 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 2160p47.95, 2160p48, 2160p50, 2160p59.94, 2160p60, 2160p95.90, 2160p96, 2160p100, 2160p119.88, 2160p120

4K Video Standards: 4Kp23.98 DCI, 4Kp24 DCI, 4Kp25 DCI, 4Kp29.97 DCI, 4Kp30 DCI, 4Kp47.95 DCI, 4Kp48 DCI, 4Kp50 DCI, 4Kp59.94 DCI, 4Kp60 DCI, 4Kp95.90 DCI, 4Kp96 DCI, 4Kp100 DCI, 4Kp119.88 DCI, 4Kp120 DCI

8K Video Standards: 4320p23.98, 4320p24, 4320p25, 4320p29.97, 4320p30, 4320p47.95, 4320p48, 4320p50, 4320p59.94, 4320p60

8K DCI Video Standards: 8Kp23.98 DCI, 8Kp24 DCI, 8Kp25 DCI, 8Kp29.97 DCI, 8Kp30 DCI, 8Kp47.95 DCI, 8Kp48 DCI, 8Kp50 DCI, 8Kp59.94 DCI, 8Kp60 DCI

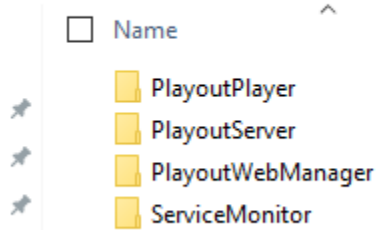
Attention: Color space 4.2.0 or 4.4.4 recommended to support the GPU acceleration!



The pre-installed basic software suite includes the software:

- PlayoutServer: Is the core software for processing and playing video files.
- PlayoutWebManager: Is software that provides web API for monitoring and configuring PlayoutServer.
- ServiceMonitor: A web interface that connects to the PlayoutServer through the PlayoutWebManager, providing a web interface for monitoring and configuring the PlayoutServer.
- PlayoutPlayer: A simple web interface that allows scheduling and controlling file playback of PlayoutServer.

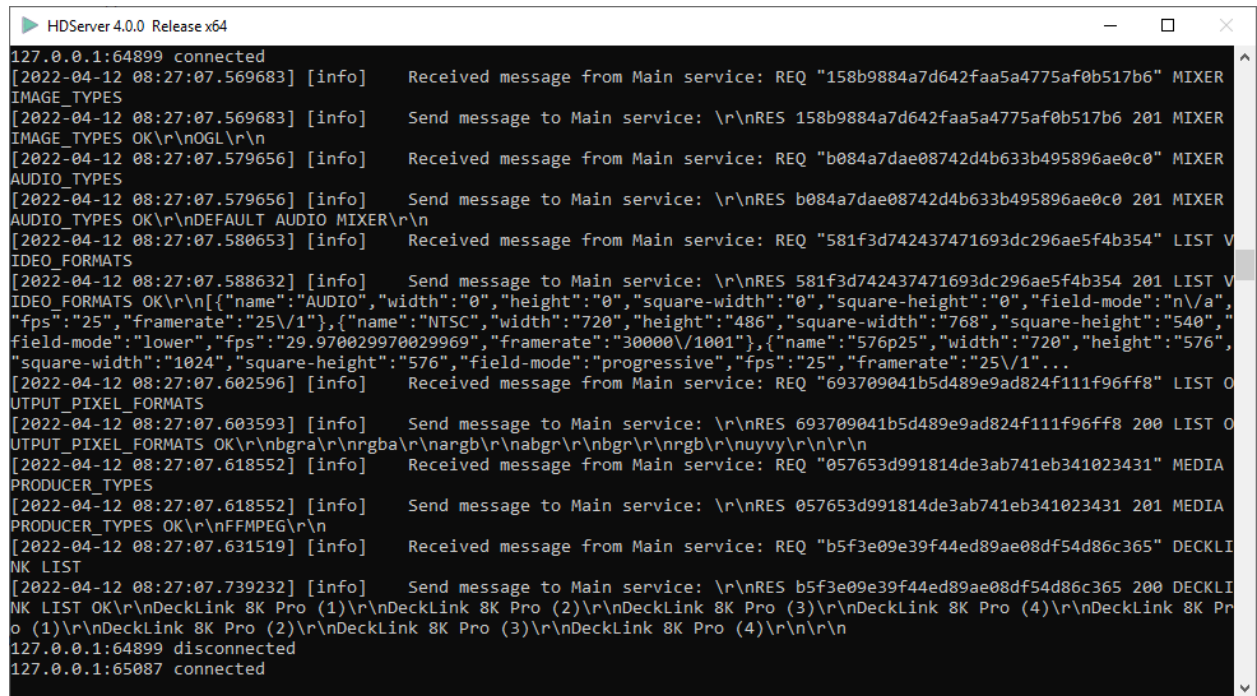
Program Files > HDUltraSoft



I. PLAYOUT SERVER

Playout Server is the core software to process and play video files in the desired format.

The software runs in the form of a console, configured through the web interface



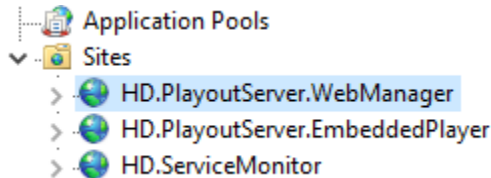
```

HDServer 4.0.0 Release x64
127.0.0.1:64899 connected
[2022-04-12 08:27:07.569683] [info] Received message from Main service: REQ "158b9884a7d642faa5a4775af0b517b6" MIXER
IMAGE_TYPES
[2022-04-12 08:27:07.569683] [info] Send message to Main service: \r\nRES 158b9884a7d642faa5a4775af0b517b6 201 MIXER
IMAGE_TYPES OK\r\nOGL\r\n
[2022-04-12 08:27:07.579656] [info] Received message from Main service: REQ "b084a7dae08742d4b633b495896ae0c0" MIXER
AUDIO_TYPES
[2022-04-12 08:27:07.579656] [info] Send message to Main service: \r\nRES b084a7dae08742d4b633b495896ae0c0 201 MIXER
AUDIO_TYPES OK\r\nDEFAULT AUDIO MIXER\r\n
[2022-04-12 08:27:07.580653] [info] Received message from Main service: REQ "581f3d742437471693dc296ae5f4b354" LIST V
IDEO_FORMATS
[2022-04-12 08:27:07.588632] [info] Send message to Main service: \r\nRES 581f3d742437471693dc296ae5f4b354 201 LIST V
IDEO_FORMATS OK\r\n[{"name":"AUDIO","width":"0","height":"0","square-width":"0","square-height":"0","field-mode":"n/a",
"fps":"25","framerate":"25\1"}, {"name":"NTSC","width":"720","height":"486","square-width":"768","square-height":"540",
"field-mode":"lower","fps":"29.970029970029969","framerate":"30000\1001"}, {"name":"576p25","width":"720","height":"576",
"square-width":"1024","square-height":"576","field-mode":"progressive","fps":"25","framerate":"25\1"}]
[2022-04-12 08:27:07.602596] [info] Received message from Main service: REQ "693709041b5d489e9ad824f111f96ff8" LIST O
UTPUT_PIXEL_FORMATS
[2022-04-12 08:27:07.603593] [info] Send message to Main service: \r\nRES 693709041b5d489e9ad824f111f96ff8 200 LIST O
UTPUT_PIXEL_FORMATS OK\r\nbgra\r\nrgba\r\nargb\r\nabgr\r\nbgr\r\nrgrb\r\nuyvy\r\n\r\n\r\n
[2022-04-12 08:27:07.618552] [info] Received message from Main service: REQ "057653d991814de3ab741eb341023431" MEDIA
PRODUCER_TYPES
[2022-04-12 08:27:07.618552] [info] Send message to Main service: \r\nRES 057653d991814de3ab741eb341023431 201 MEDIA
PRODUCER_TYPES OK\r\nFFMPEG\r\n
[2022-04-12 08:27:07.631519] [info] Received message from Main service: REQ "b5f3e09e39f44ed89ae08df54d86c365" DECKLI
NK LIST
[2022-04-12 08:27:07.739232] [info] Send message to Main service: \r\nRES b5f3e09e39f44ed89ae08df54d86c365 200 DECKLI
NK LIST OK\r\nDeckLink 8K Pro (1)\r\nDeckLink 8K Pro (2)\r\nDeckLink 8K Pro (3)\r\nDeckLink 8K Pro (4)\r\nDeckLink 8K Pro
o (1)\r\nDeckLink 8K Pro (2)\r\nDeckLink 8K Pro (3)\r\nDeckLink 8K Pro (4)\r\n\r\n
127.0.0.1:64899 disconnected
127.0.0.1:65087 connected
    
```

II. PLAYOUT WEB MANAGER

Playout Web Manager is a web API software, providing API to configure Playout Server through Service Monitor.

The software can be run standalone through the console, or hosted on IIS.

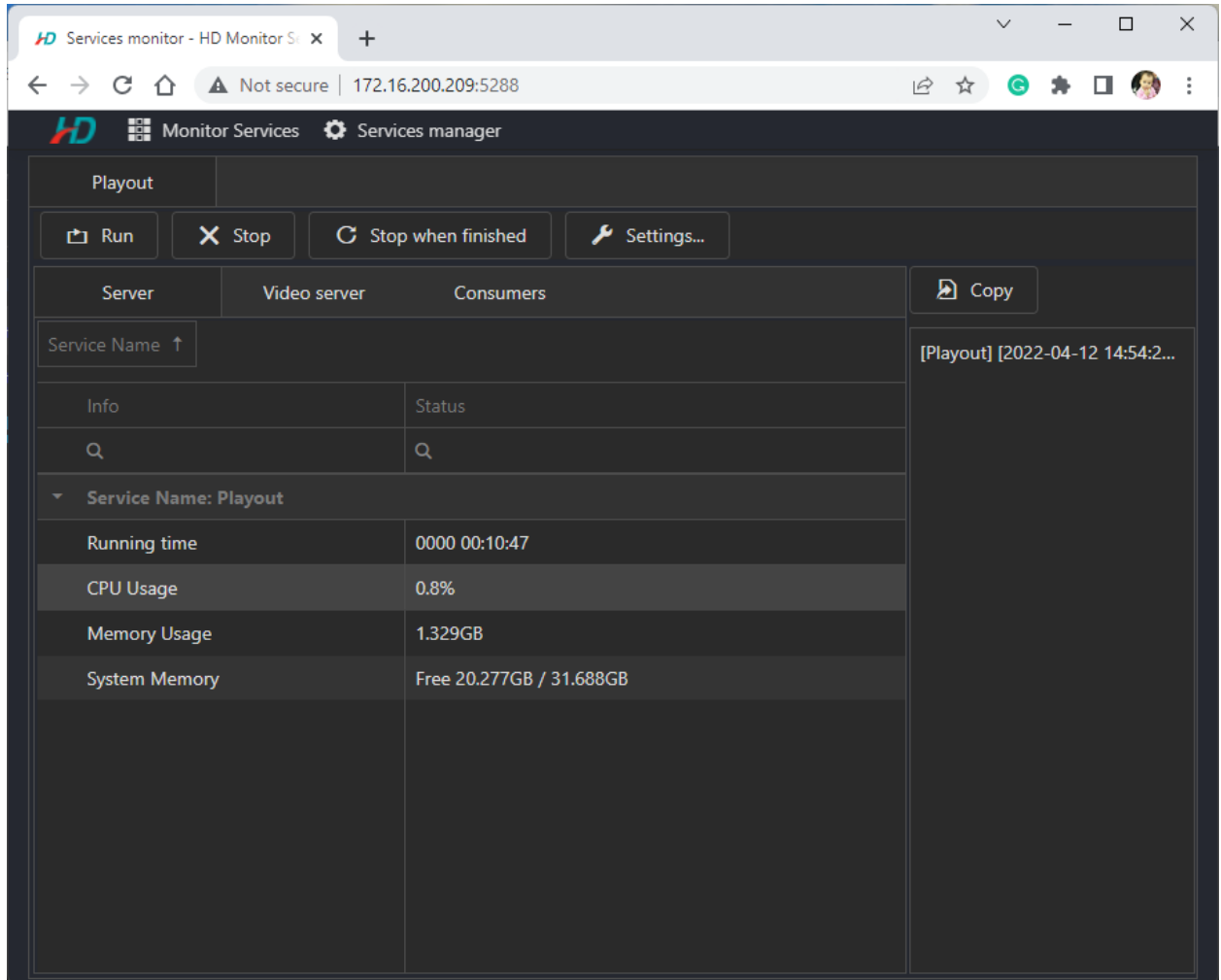


III. SERVICE MONITOR

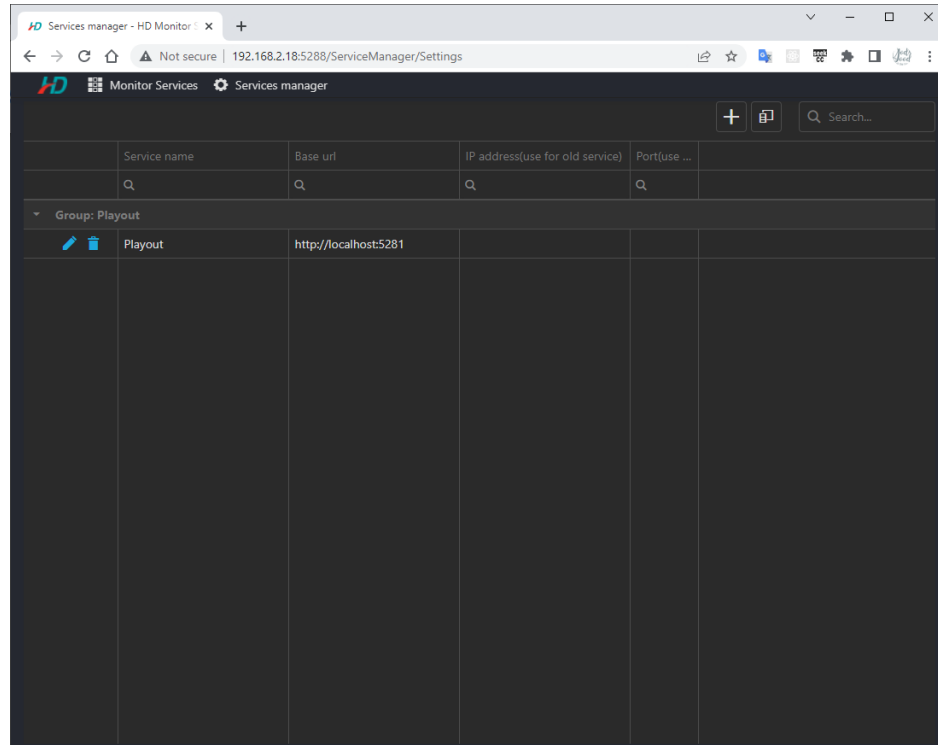
Service Monitor is a software that provides a web interface to monitor and configure services developed by HDUltraSoft.

The software can be run standalone through the console, or hosted on IIS.

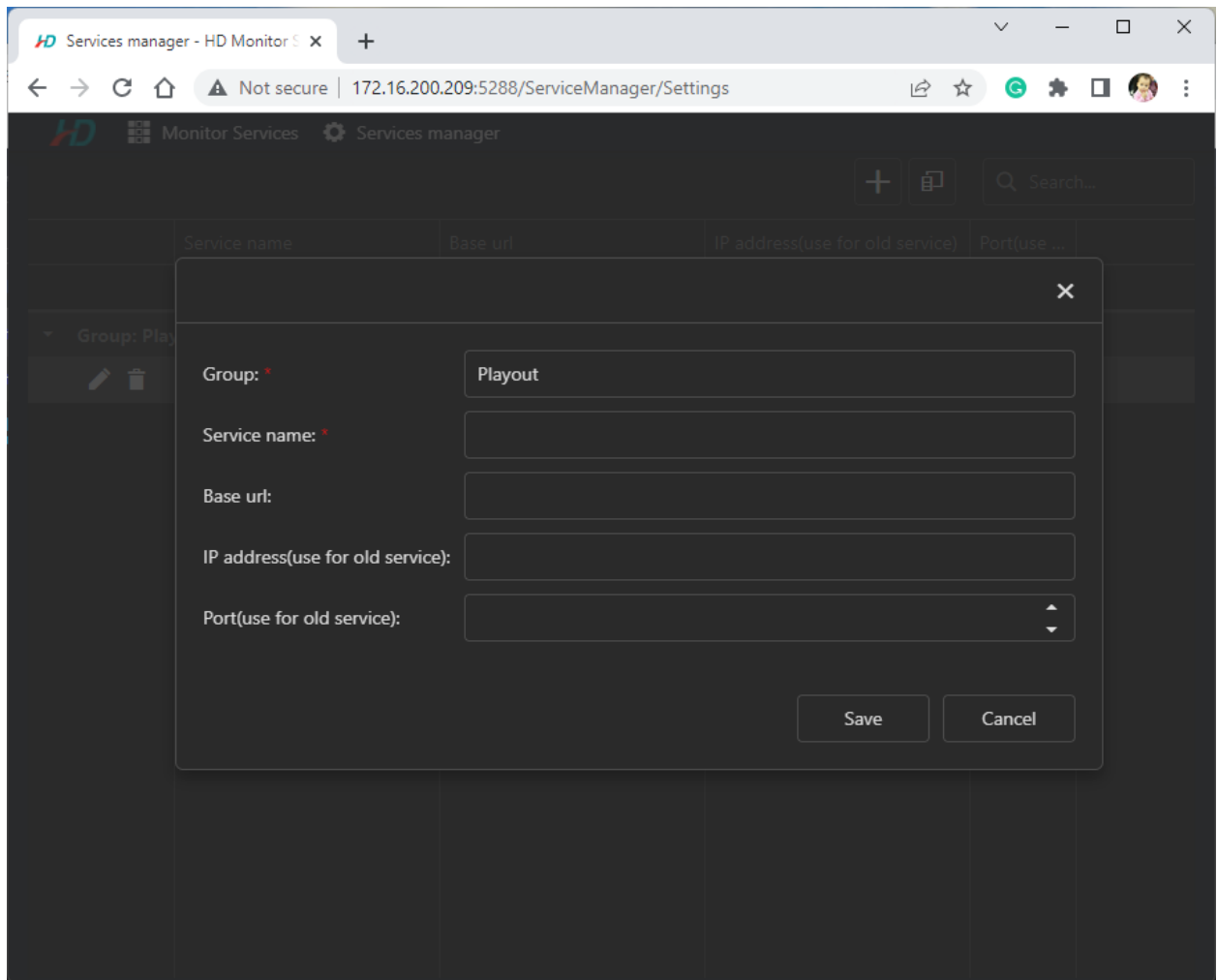
Use the software by accessing the software's web address through a browser:



1. Add service to track - Service manager



- To add 1 service to monitor, click the Add (+) button on the service manager



Fill in the information to connect to the service:

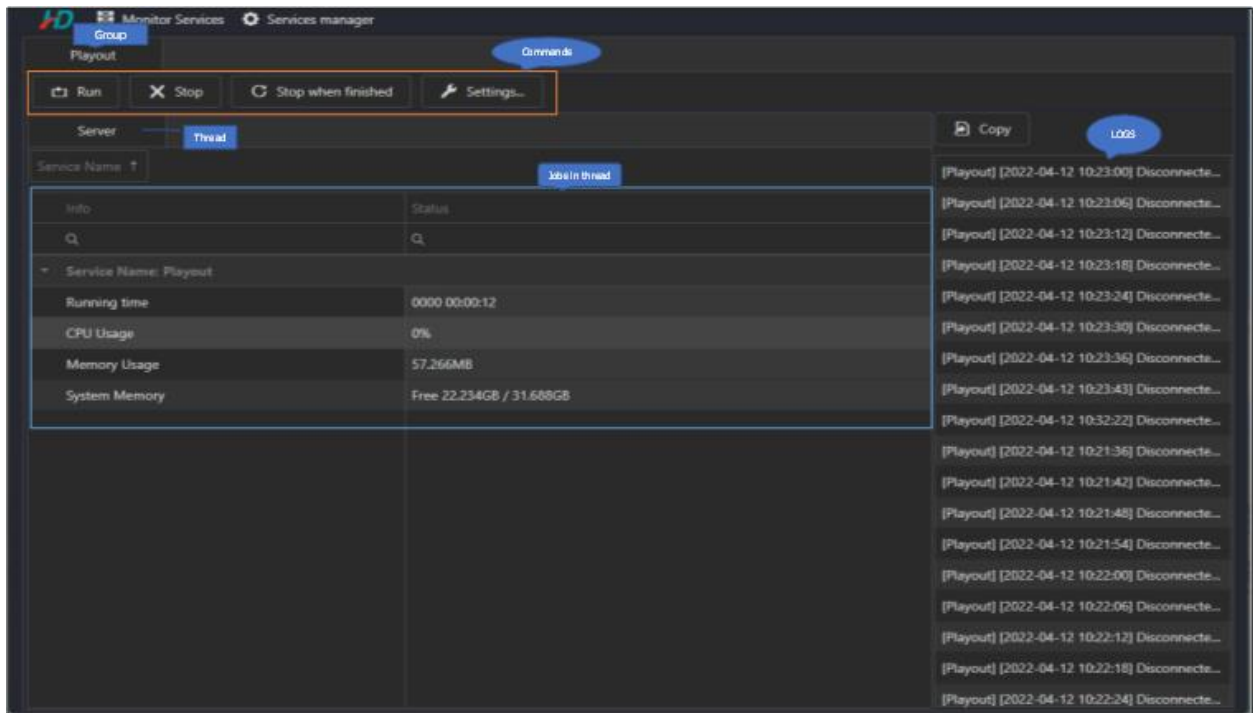
- + **Group:** Name of the service group. Services with the same functionality running on multiple machines can be grouped together to monitor together, or configured once and applied to all services in the group.

- + **Service name:** Service name

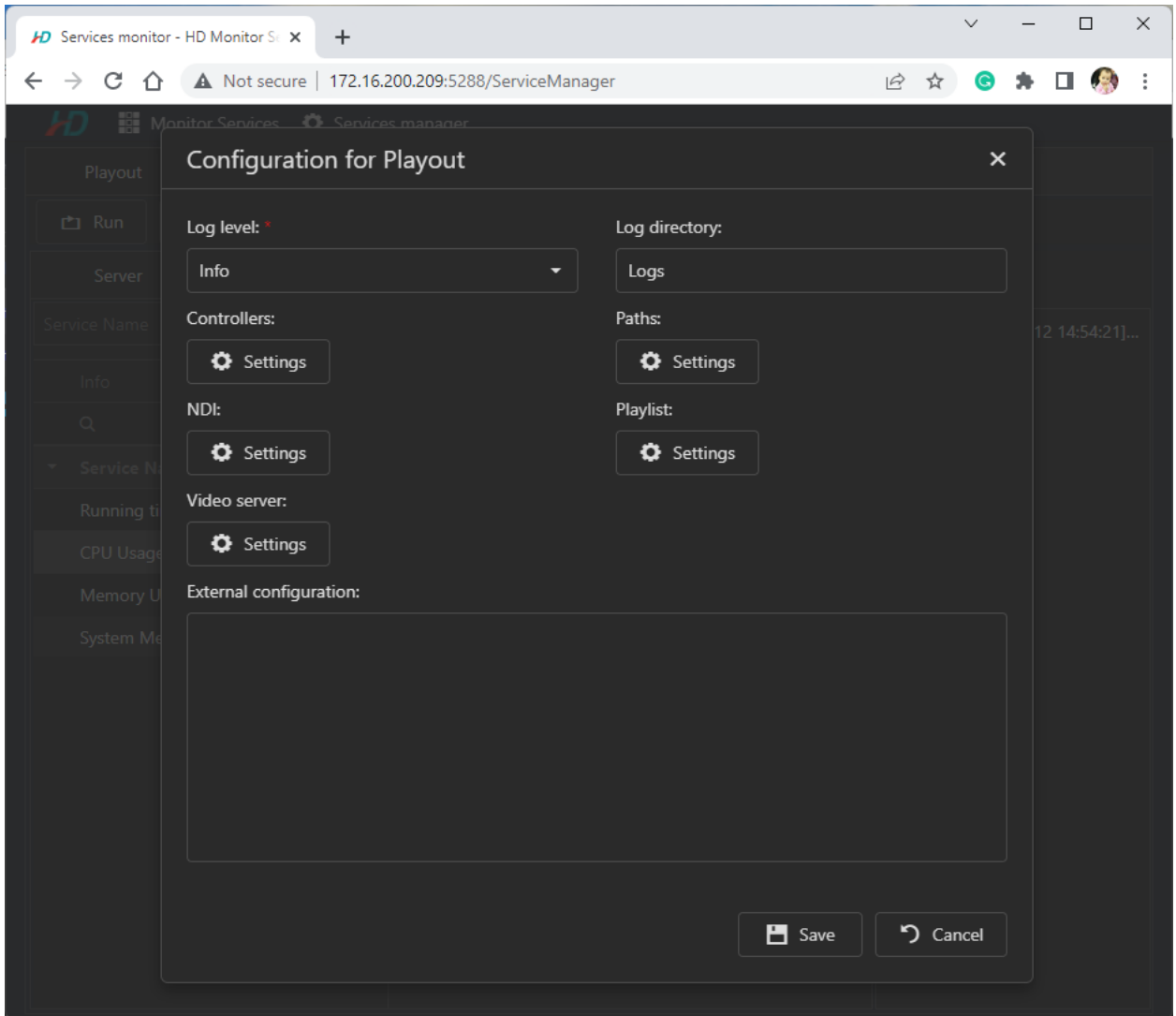
- + **Base url:** Is the API address of the service

After entering the information, click Save to add the service and start monitoring.

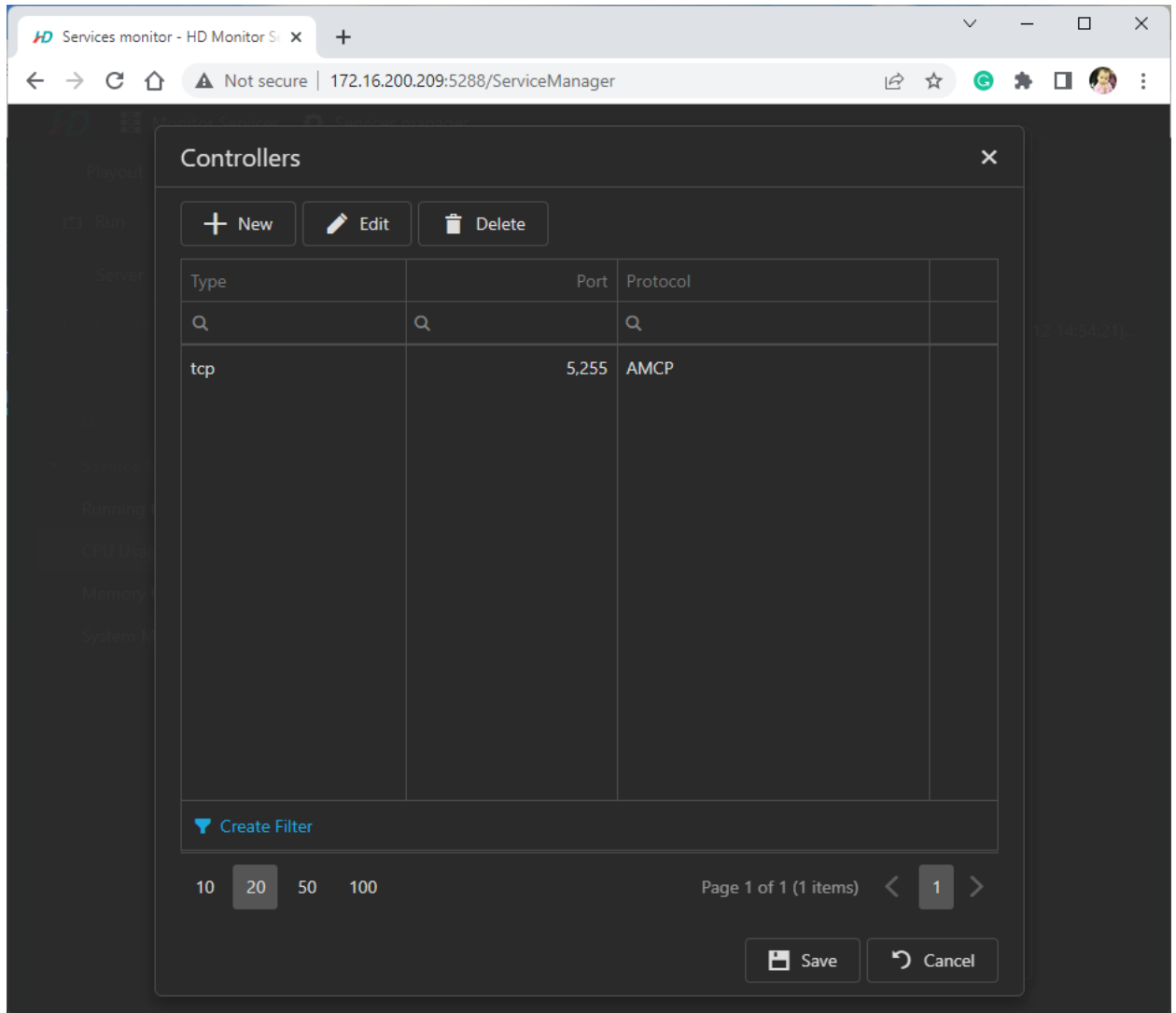
2. Service tracking - Monitor services



- **Run command:** To run the service after stopping
- **Stop command:** To stop the service
- **Stop when finished:** To stop the service after completing the work being done
- **Settings...:** To configure the service



- + **Log level:** Log level
- + **Log directory:** Logs storage directory
- + **Controllers:** Configure TCP port to allow other software to control server over TCP connection

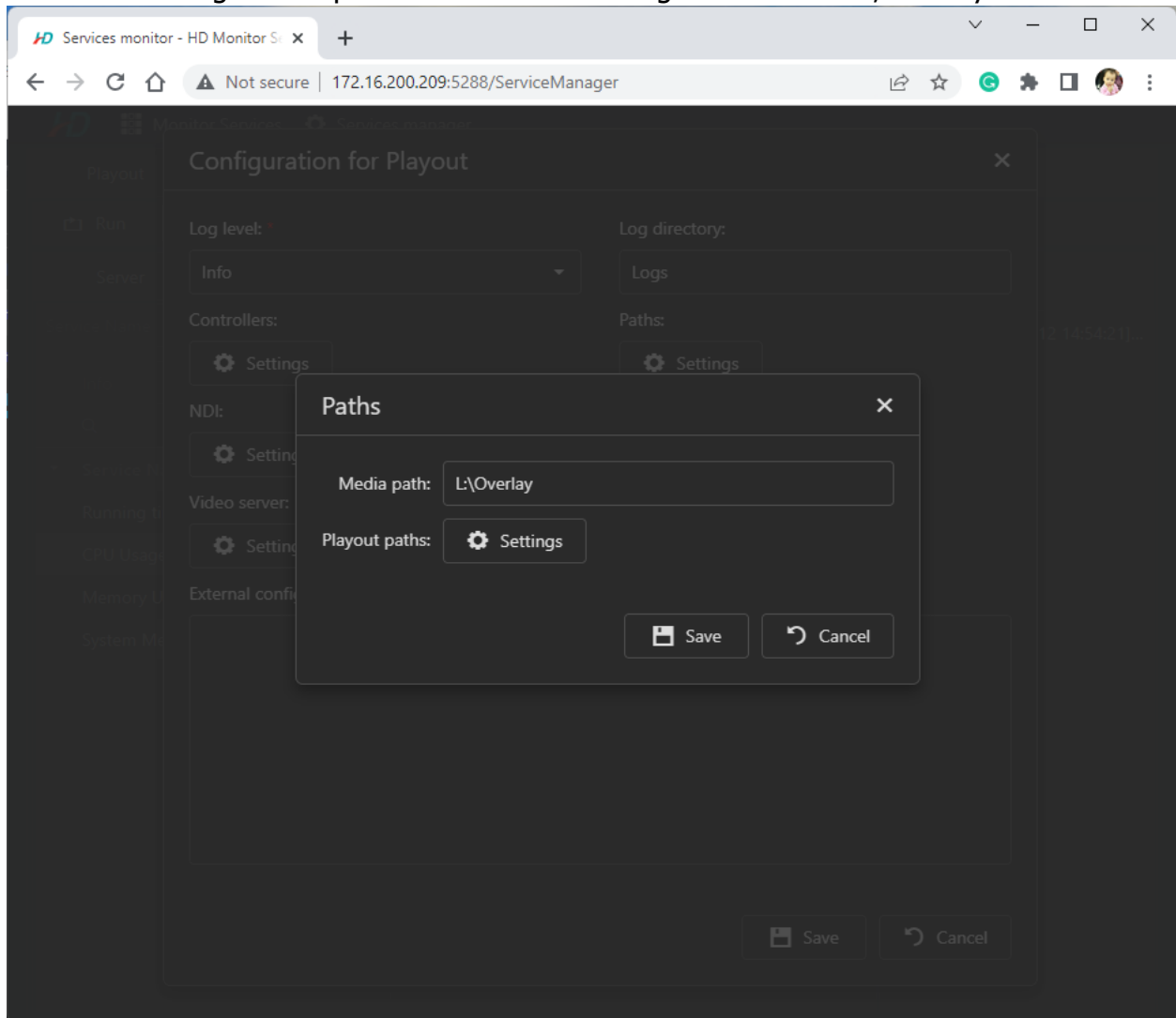


✓ To add a connection port, press the New (+) button

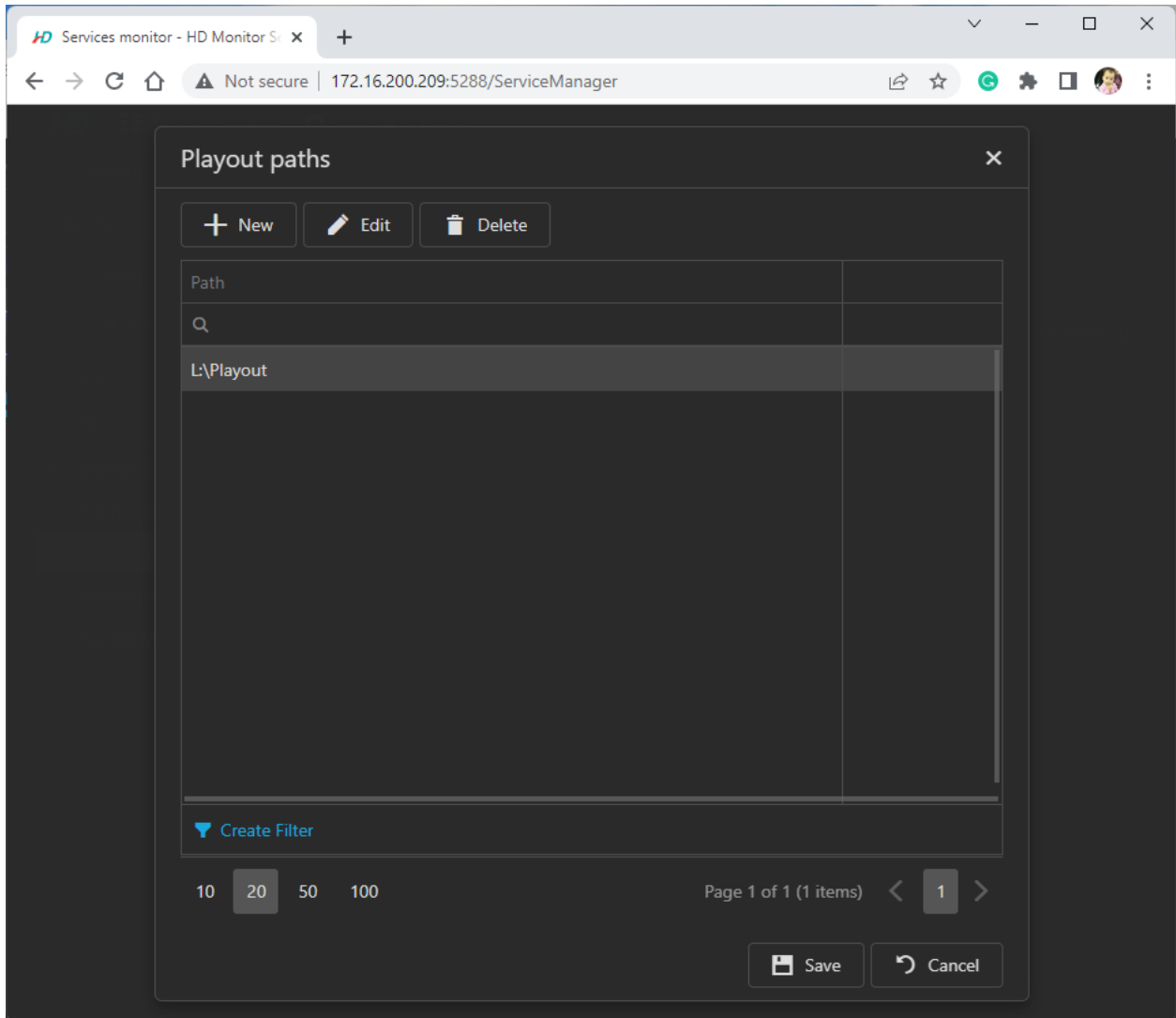
Select the connection type as TCP, desired connection port, AMCP protocol and then press "Save"

Note: This port is used for other software that controls the server to play files (eg HDServerPlayer), so this configuration cannot be changed unnecessarily.

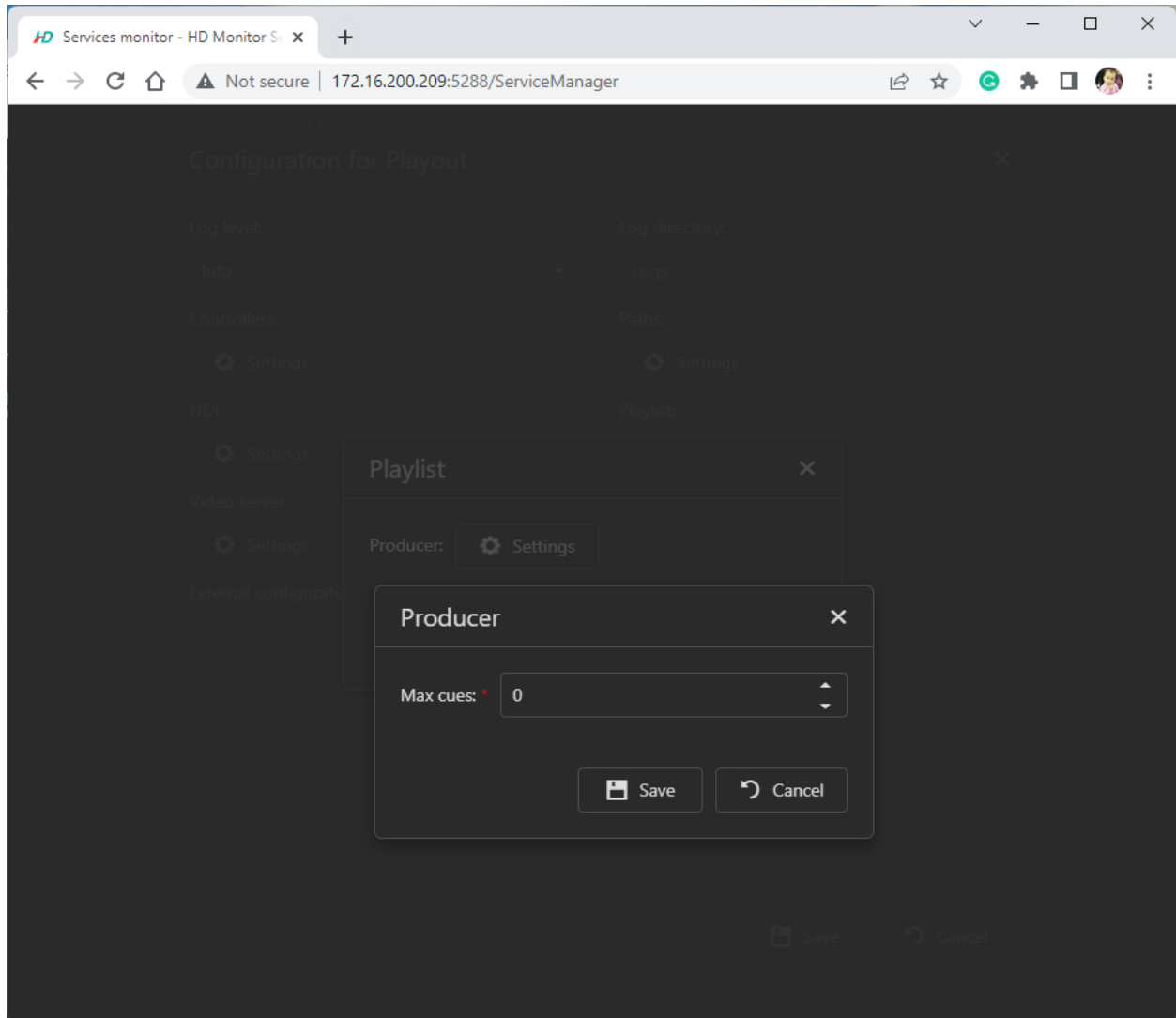
+ Paths: Configure the path to folders containing broadcast files, overlay files



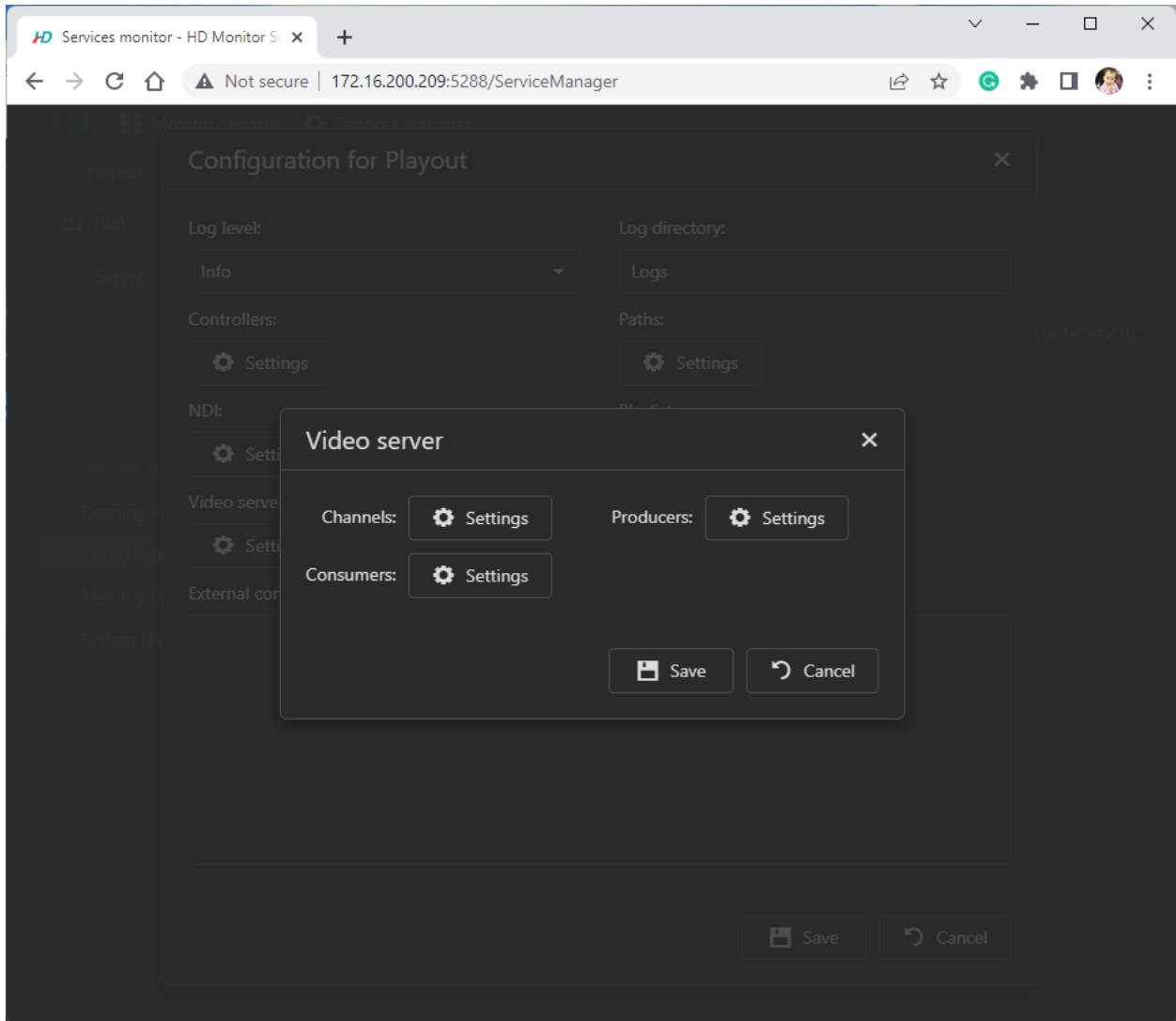
- ✓ Media path: Folder containing image/video files to overlay
- ✓ Playout paths: Folders containing video files for broadcasting



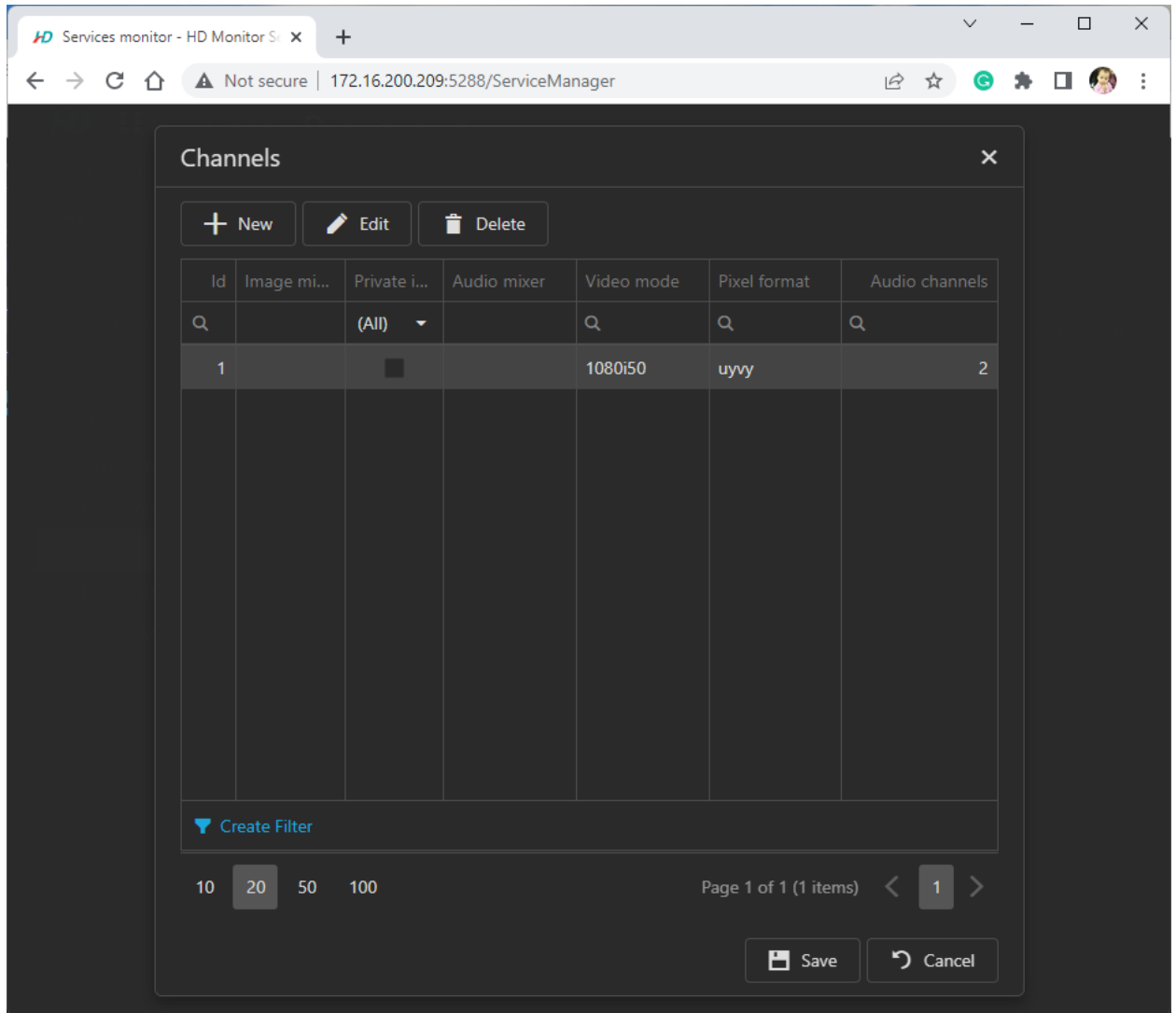
+ Playlist: Configure default options for playlist



- ✓ Max cues: Number of concurrently processed video files on schedule to be ready to broadcast, default is 2
- ✓ **+ Video server:** Configure video server

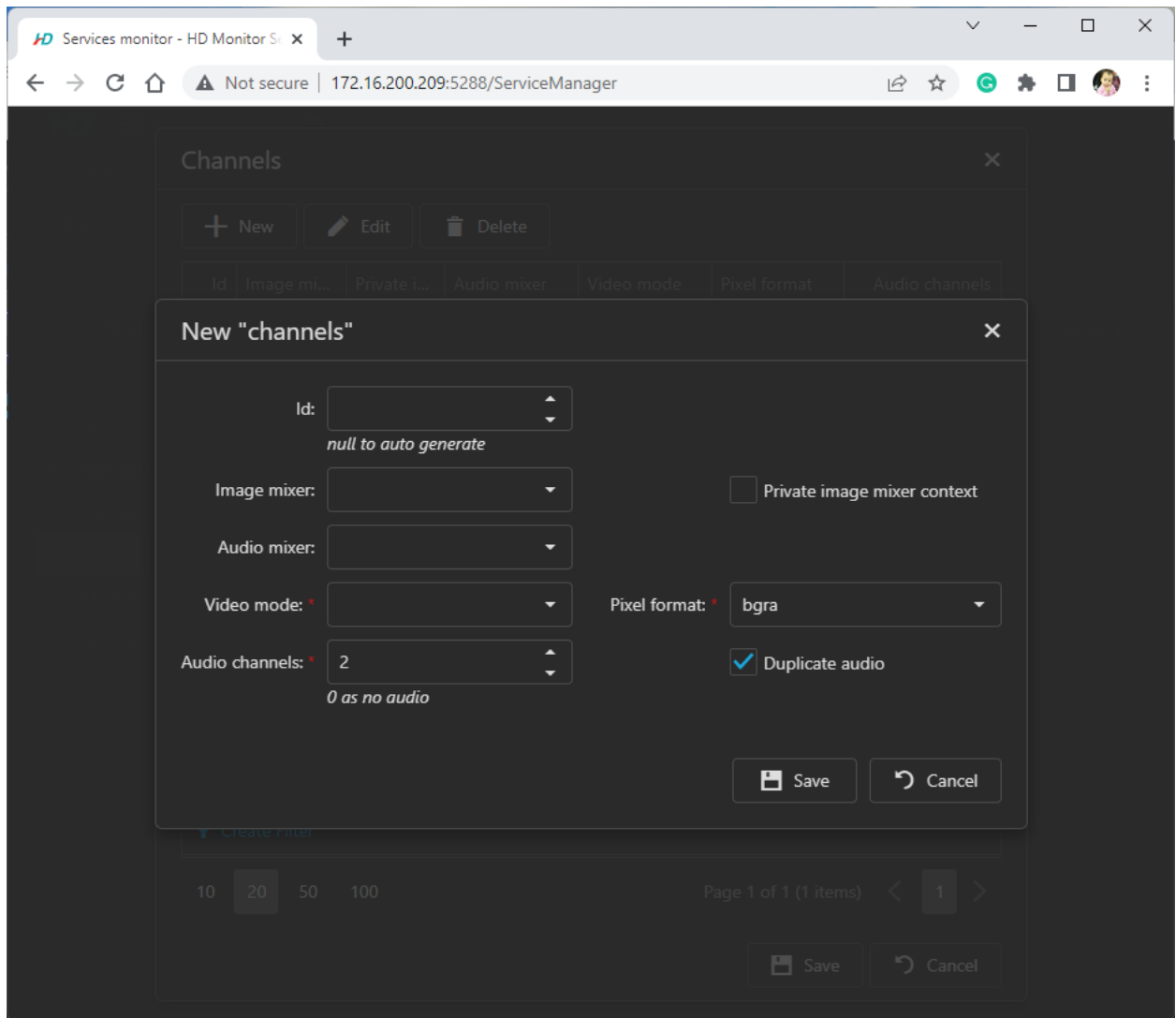


- ✓ Channels: Configure video channels

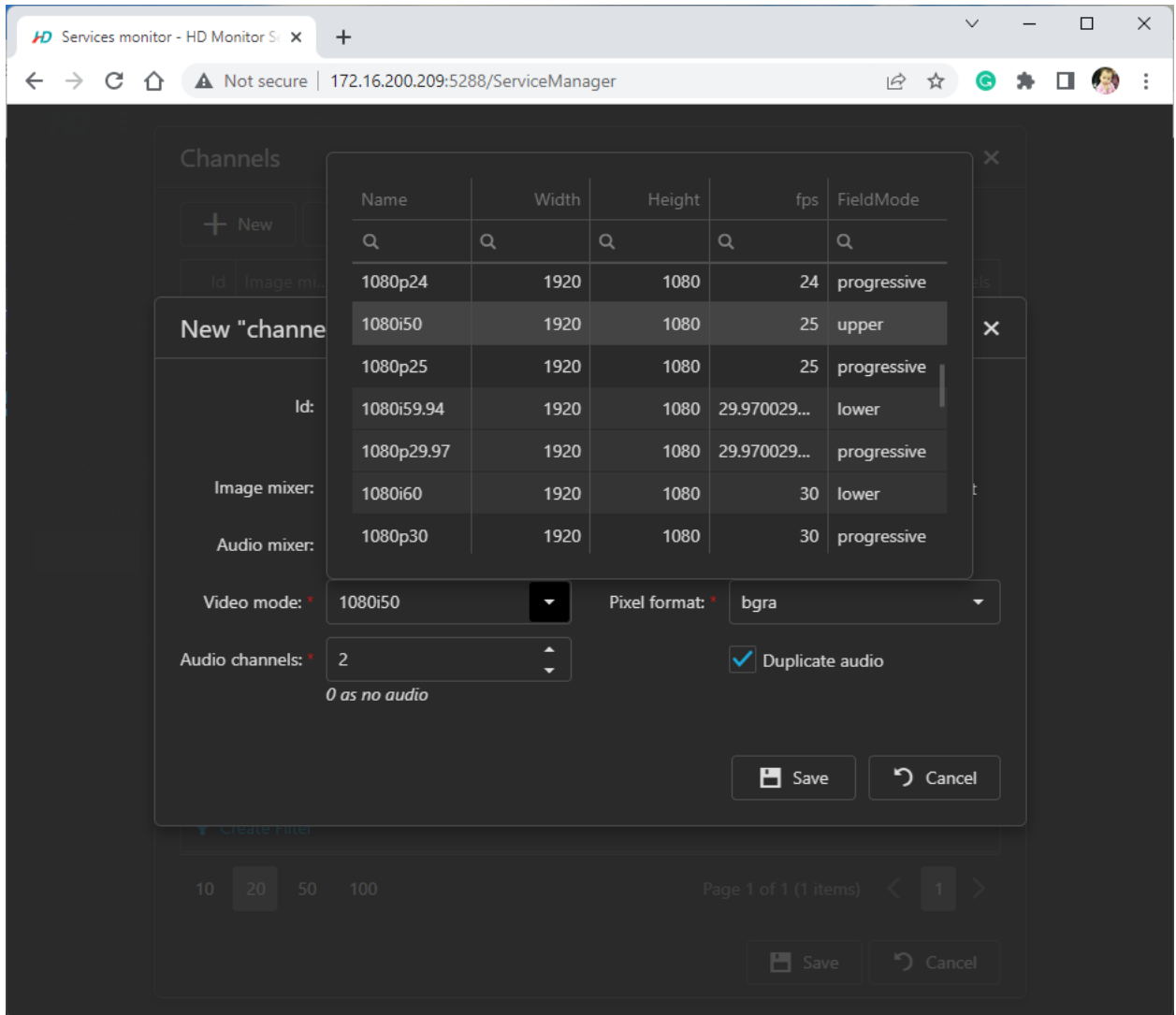


The screenshot shows a web browser window with the URL `172.16.200.209:5288/ServiceManager`. The main content is a 'Channels' modal window. At the top of the modal are three buttons: '+ New', 'Edit', and 'Delete'. Below these is a table with the following columns: 'Id', 'Image mi...', 'Private i...', 'Audio mixer', 'Video mode', 'Pixel format', and 'Audio channels'. The table contains one row with the following values: '1', an empty cell, '(All)', an empty cell, '1080i50', 'uyvy', and '2'. Below the table is a 'Create Filter' button. At the bottom of the modal, there are pagination controls showing 'Page 1 of 1 (1 items)' and a '1' button. There are also 'Save' and 'Cancel' buttons at the bottom right.

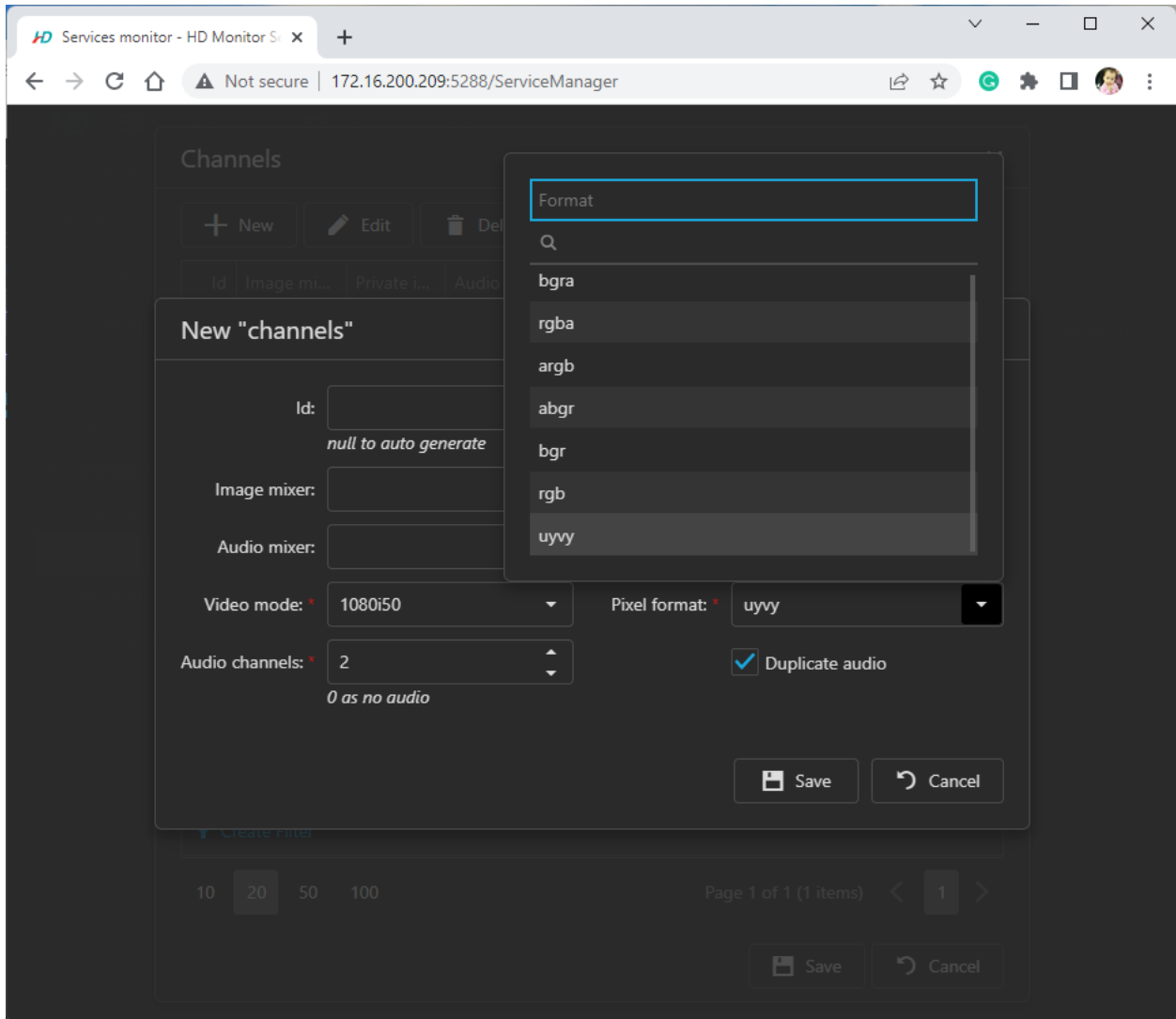
- To add a new video channel, press the New button:



- **Id:** Id of video channel, this Id will be used by other software to control
- **Image mixer:** Process of mixing and processing images
- **Audio mixer:** Process of mixing and processing audio
- **Video mode:** Video channel output resolution

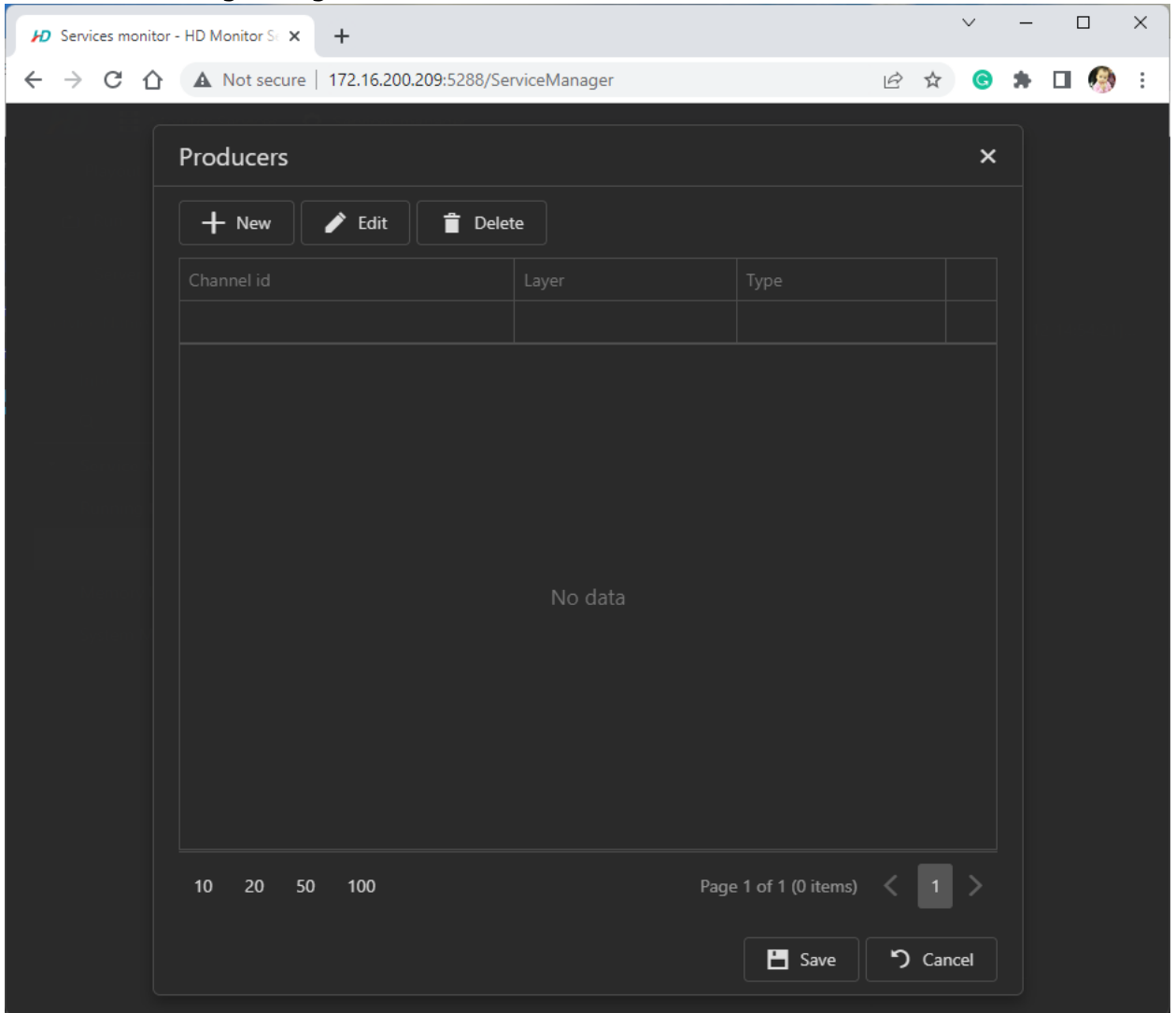


- Pixel format: Output video format of the mixer, it is recommended to choose Uvyv to reduce the bandwidth required – especially when running 4K or 8K

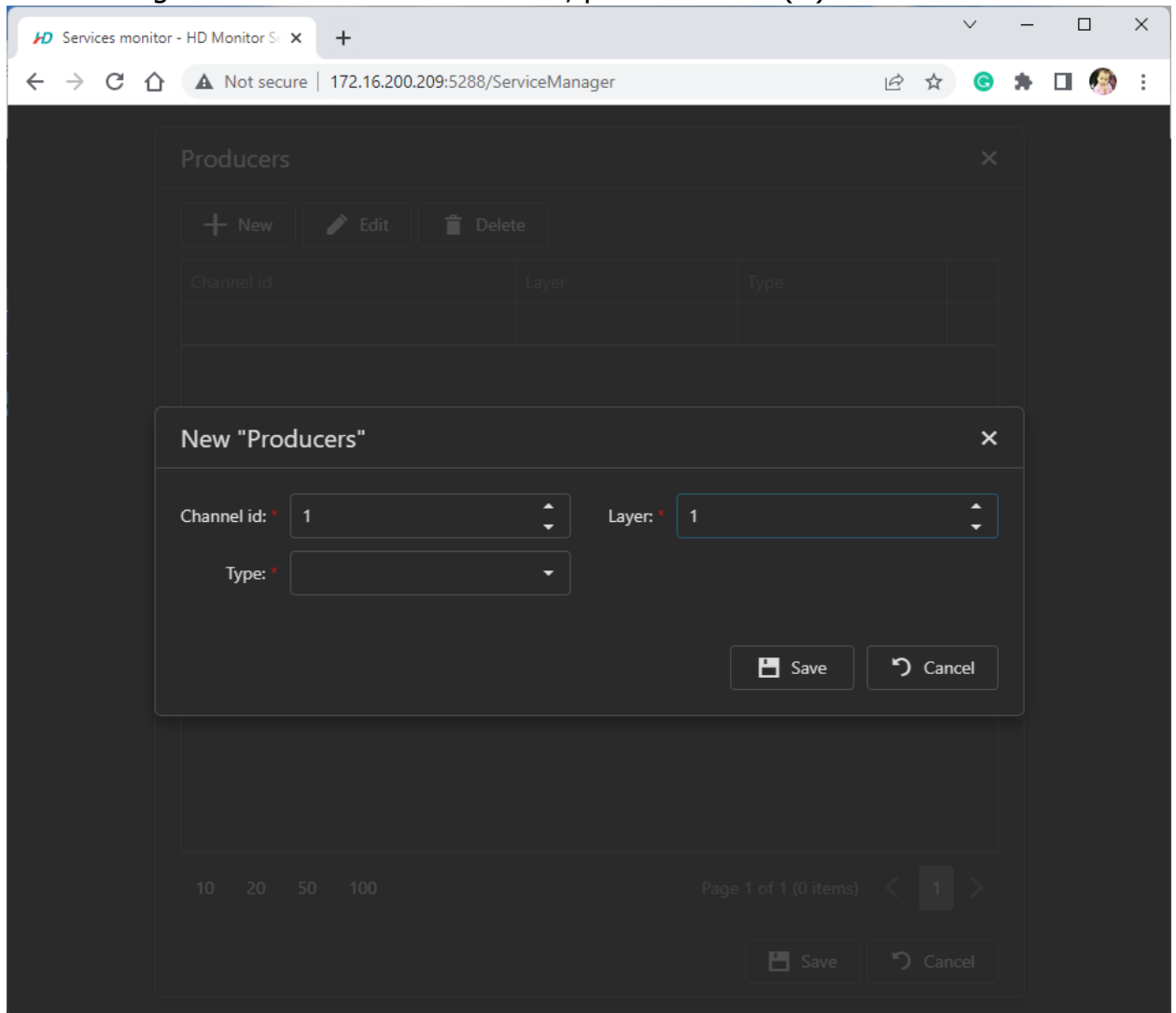


- Audio channels: Number of audio channels
- Duplicate audio: Allows multiplying audio channels when the number of audio channels of the source file is less than the number of audio channels to be output

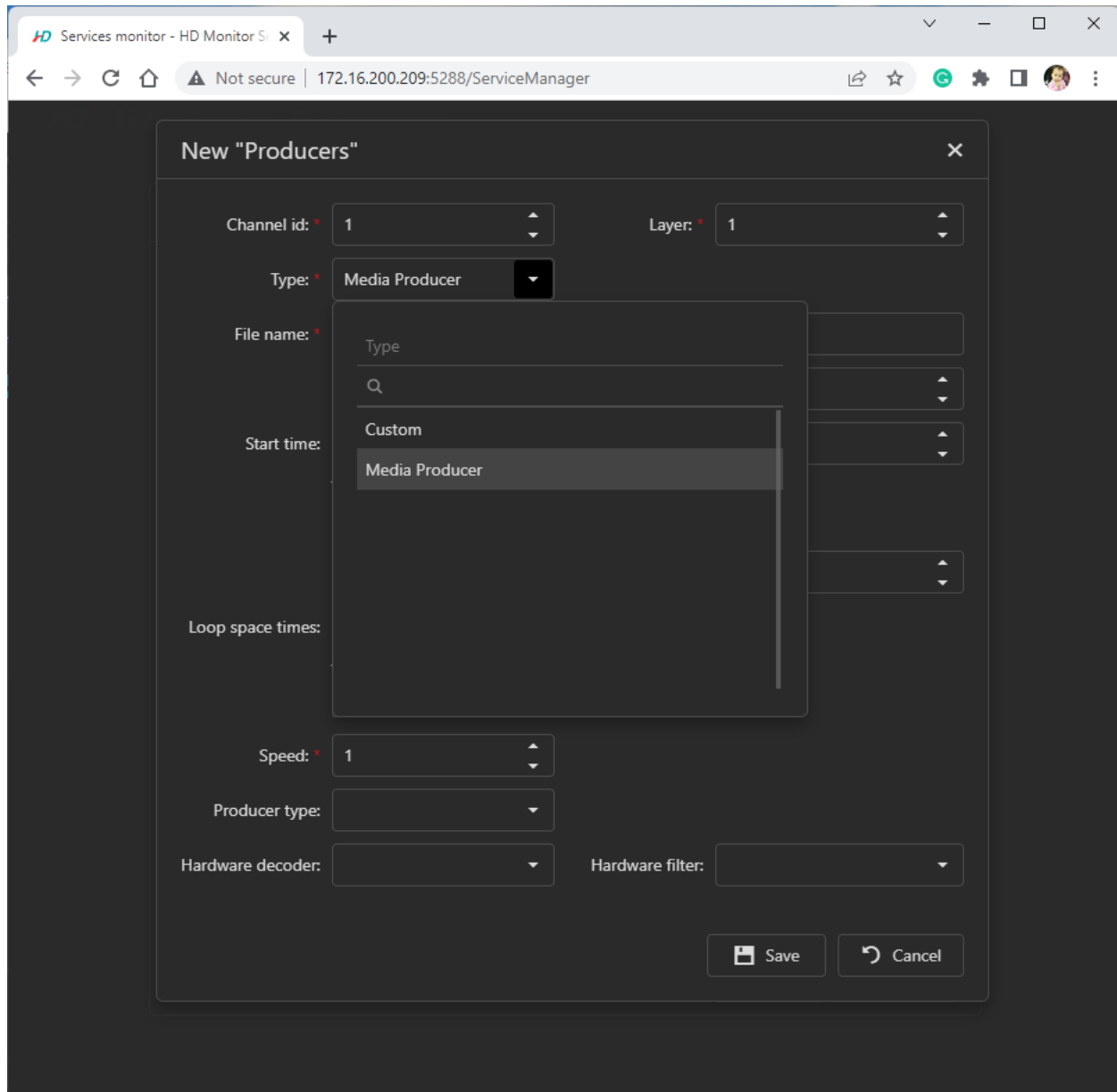
✓ Producers: Configure signal sources for video channels



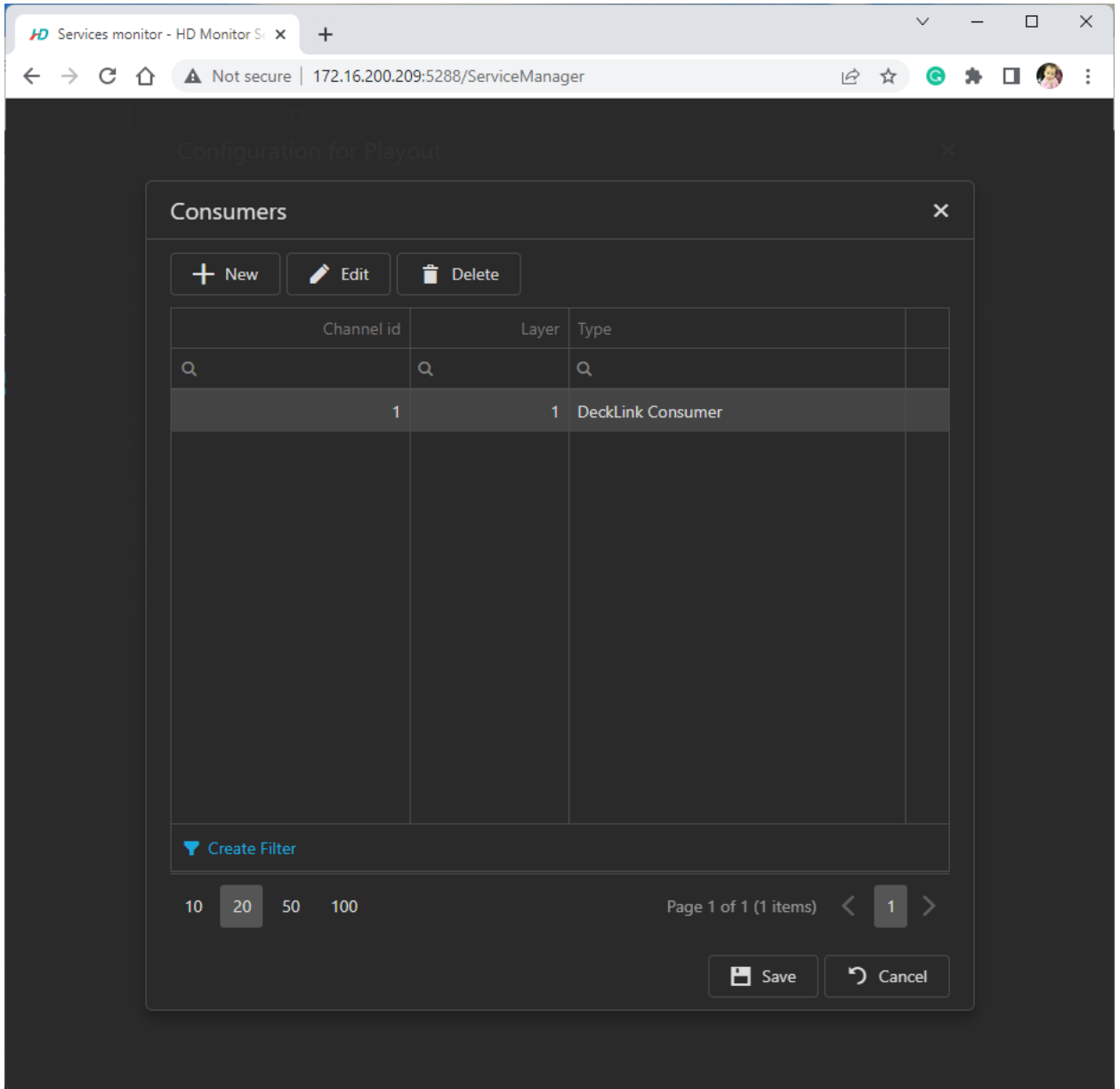
To add a signal source for a video channel, press the New (+):



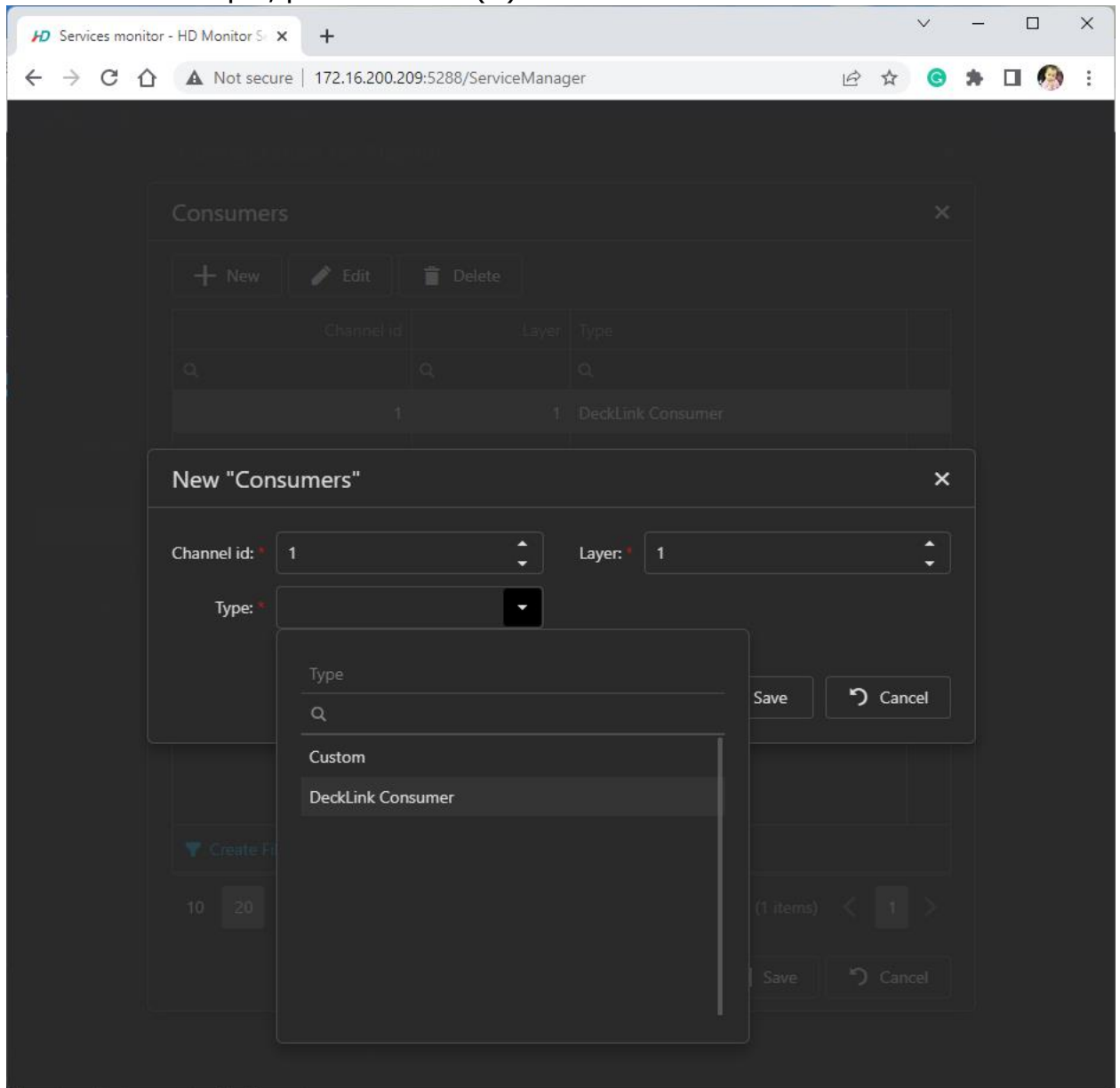
- Channel id: Id of the video channel set up above
- Layer: 1 video channel can consist of many different signal layers, choose the desired signal layer this source is placed on.
- Type: Type of signal source. Depending on the license there will be plugins for different types of signal sources. Select the type of signal to be transmitted and then set it up according to the type of signal



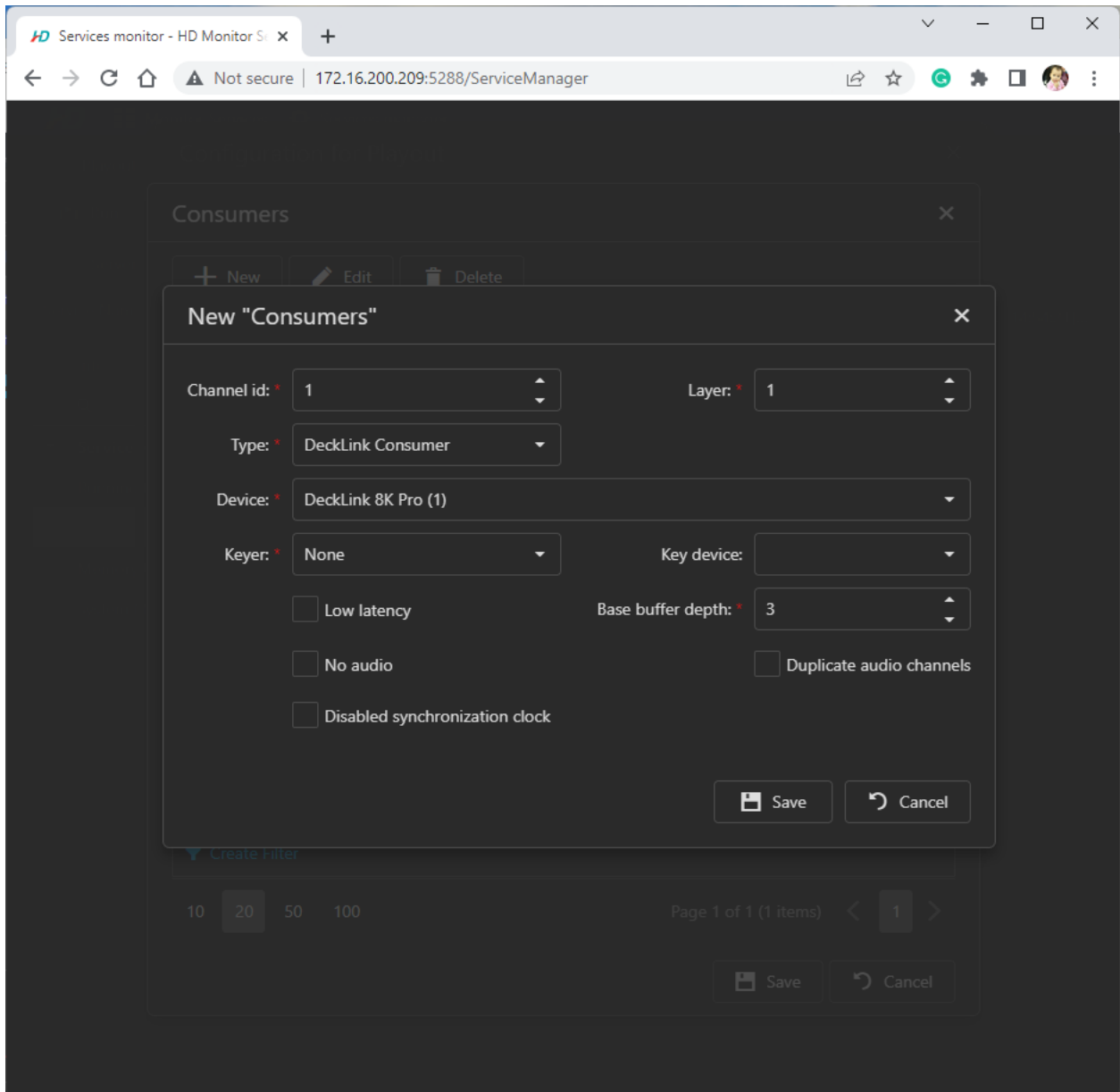
- ✓ Consumers: Configuring the outputs of video channels
There are several output options defined by layer



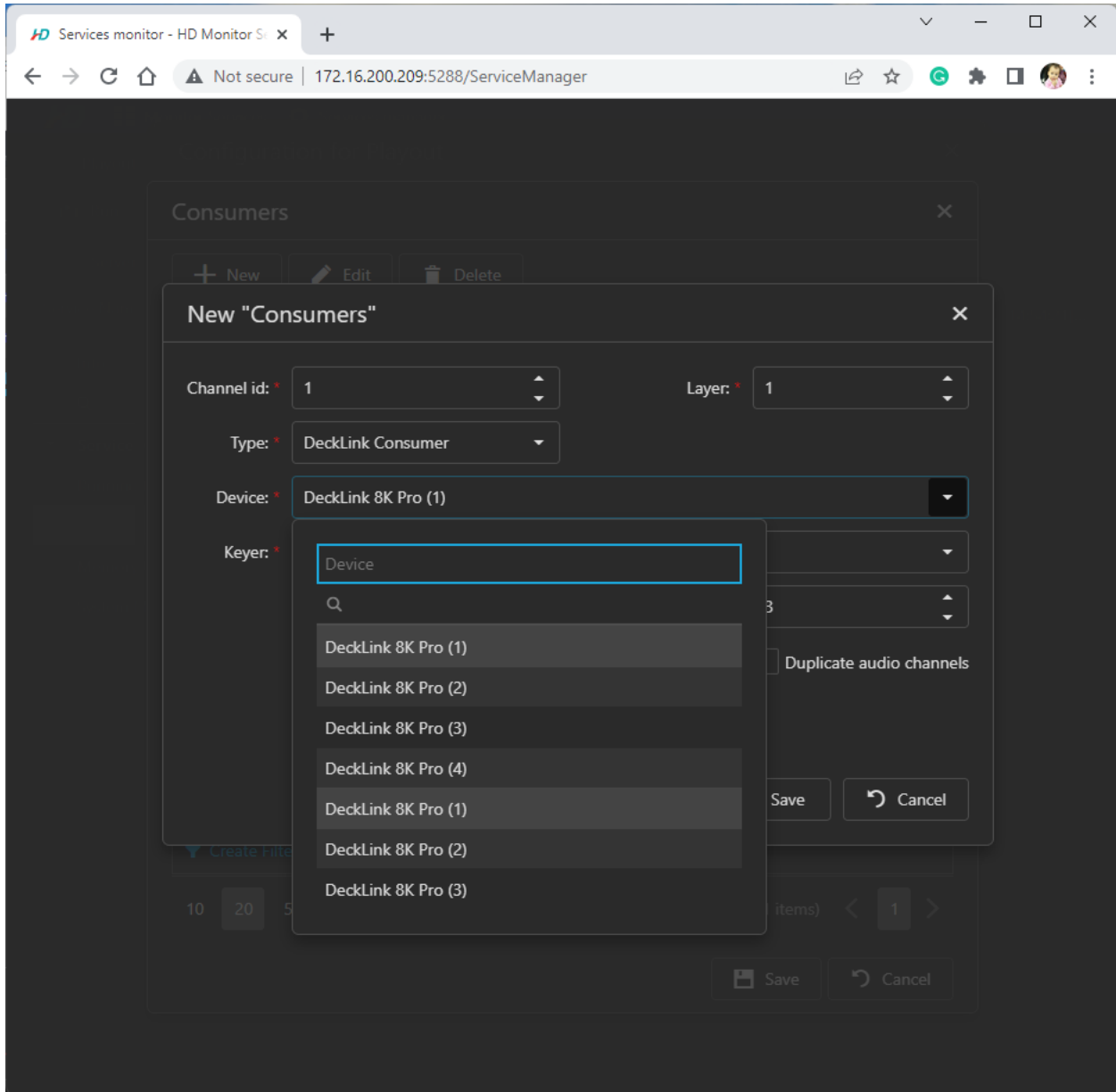
To add a new output, press the New (+) .



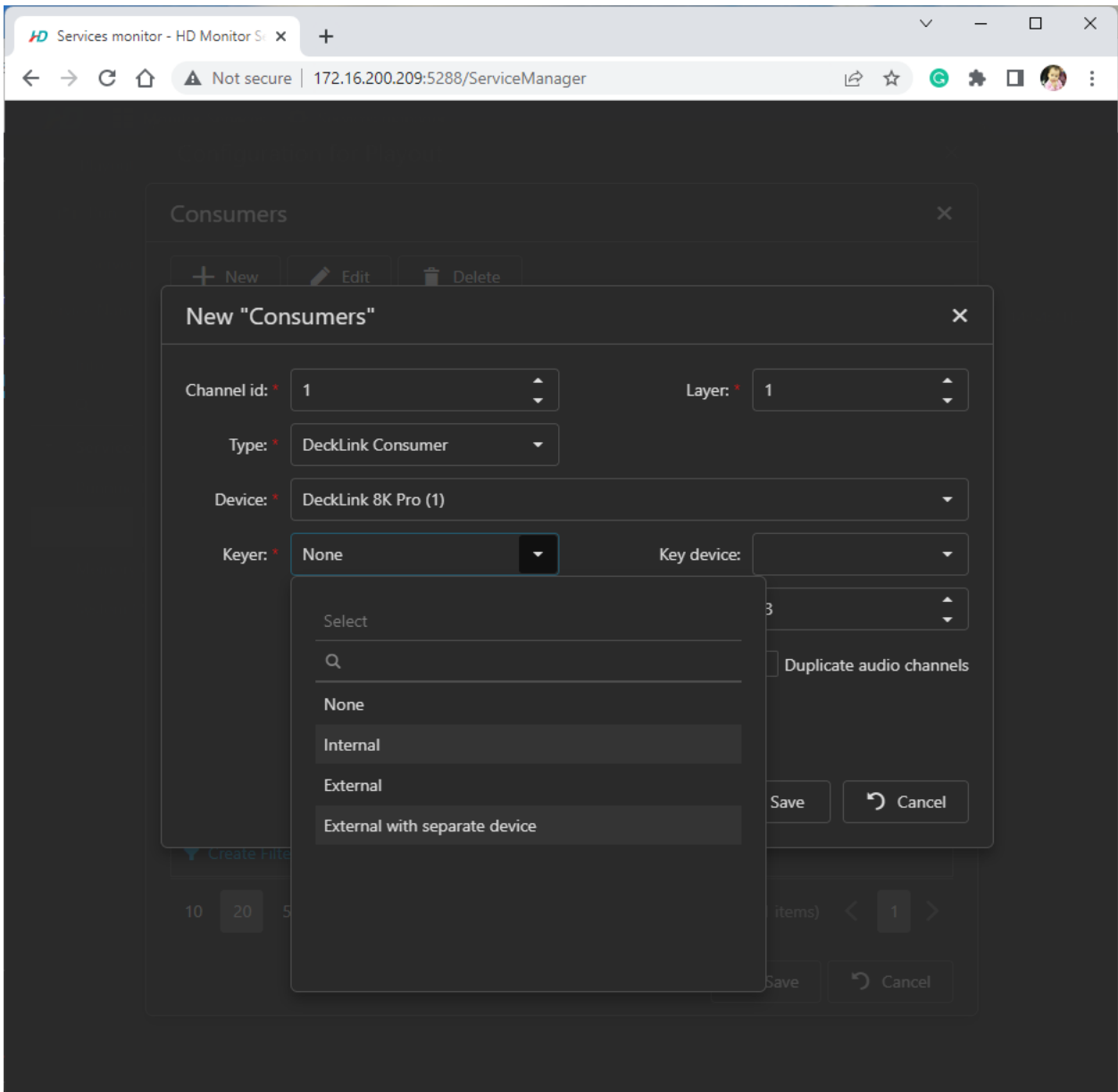
- Channel id: Id of the video channel set up above
- Layer: 1 video channel can include many different outputs, choose what you want this output to be placed in
- Type: Output type, depending on the license there will be output types to choose from
- DeckLink output configuration



 Device: select the DeckLink card on the playout



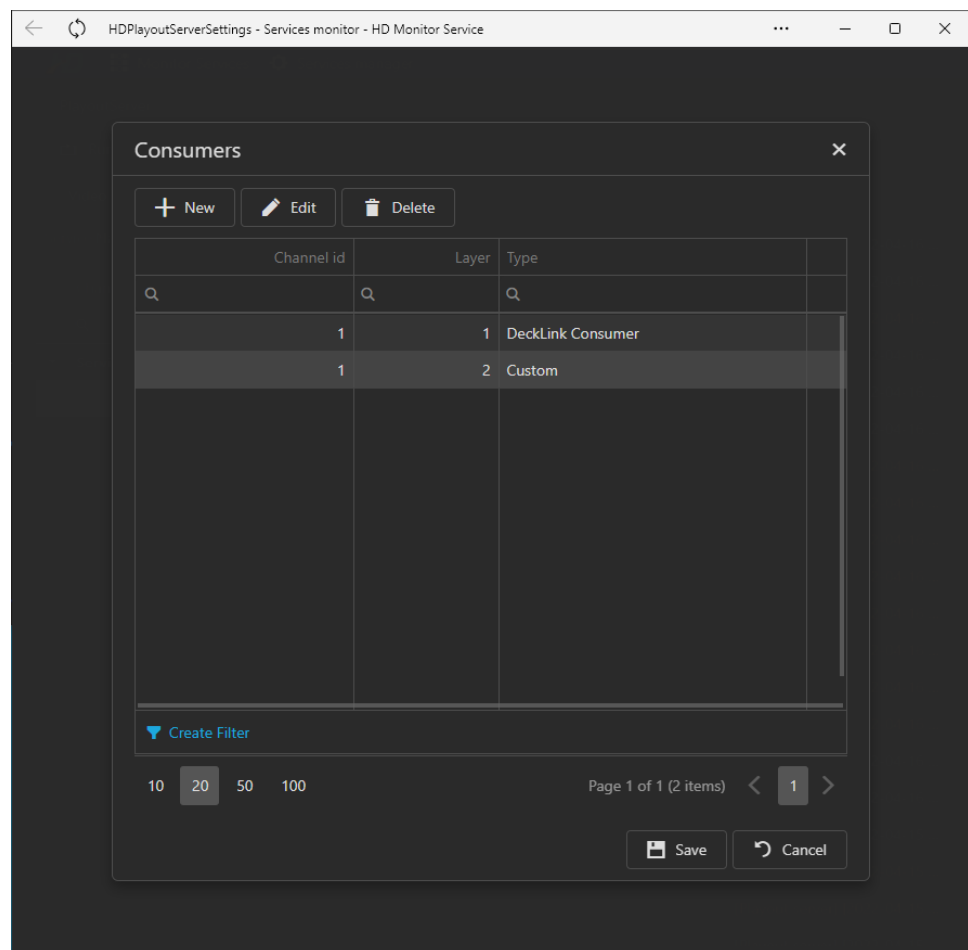
Keyer: Image key mode on DeckLink card



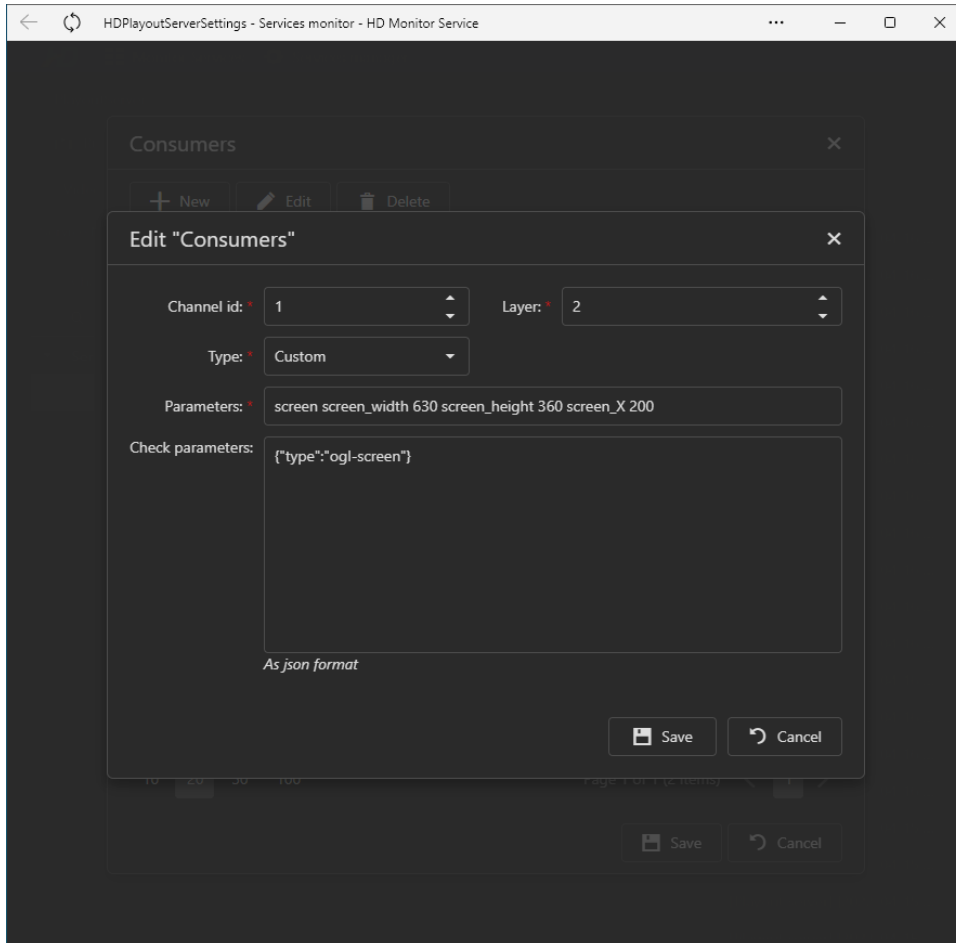
- ❖ None: no key
- ❖ Internal: The video signal is mixed into the input signal of the DeckLink card
- ❖ External: Output decklink card with Key and Fill
- ❖ External with separate device: Output decklink card with Key and Fill signal on 2 separate cards (Used when the current DeckLink card does not support External Key)
 - 🚦 Key device: Card decklink to output the Key signal in mode
 - 🚦 External with separate device
 - 🚦 Low latency: Low latency mode
 - 🚦 Base buffer depth: Home frame buffer on card
 - 🚦 No audio: Output only image, no sound

- ✚ Duplicate audio channels: Enables automatic acquisition of audio channels when the audio output of the video channel has fewer audio channels than the output of the decklink card
- ✚ Disable synchronization clock: By default, when there is a decklink output, the server will use this device to synchronize the clock with other devices in the system. If there is another pulse output on the server, this feature can be turned off

To add second output as Desktop preview (Attention: This option may cause some frame drop if server is playing back 8K video, because the OGL-preview windows take a lot of resource.)

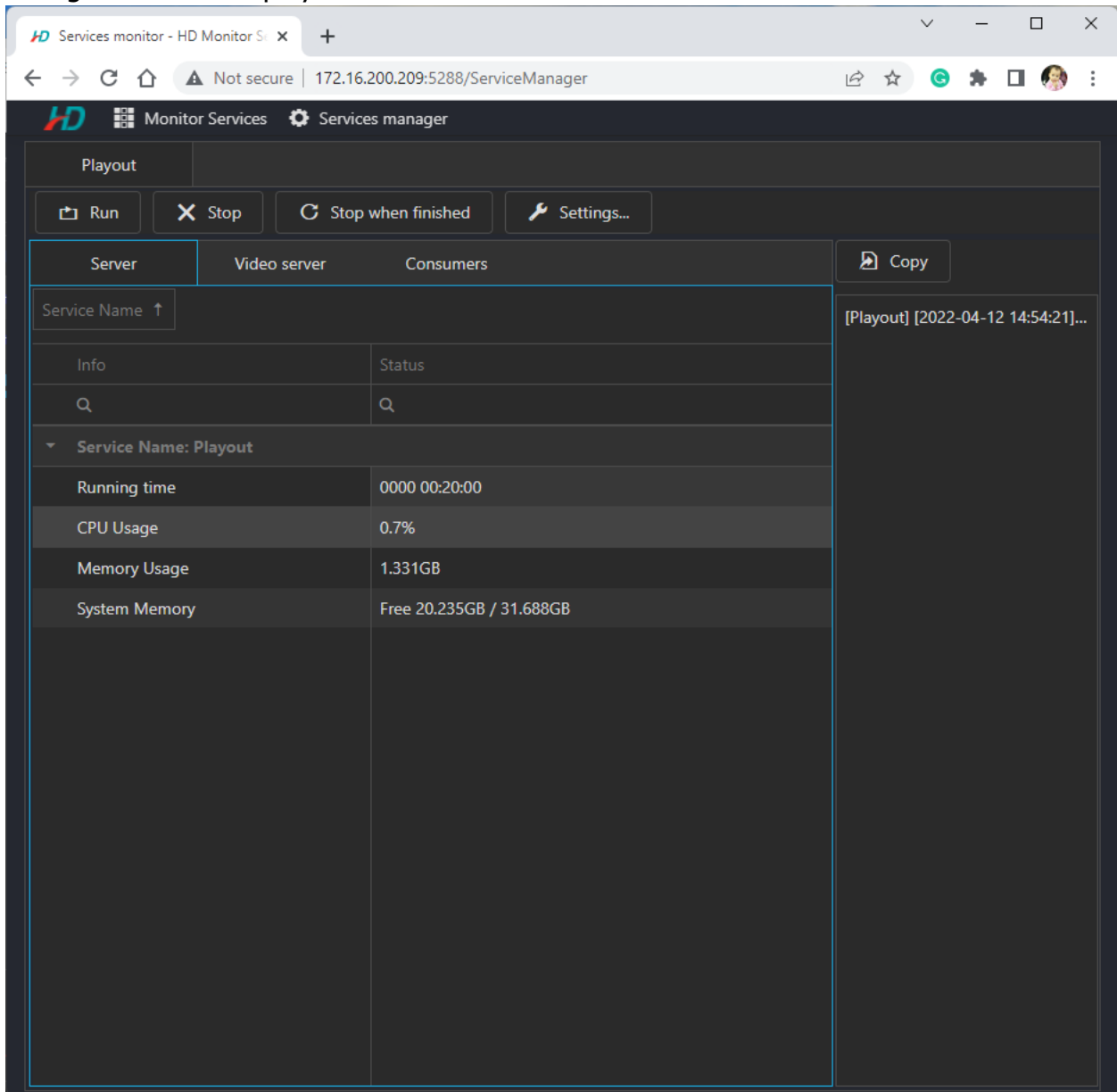


- ✚ Choose "Custom" and press Edit
- ✚ Enter Layer = 2



- ✚ Parameter: enter: Screen_width_height...
- ✚ Check parameters: Screen Name: optional
- ✚ Press Save to close the 2nd layer

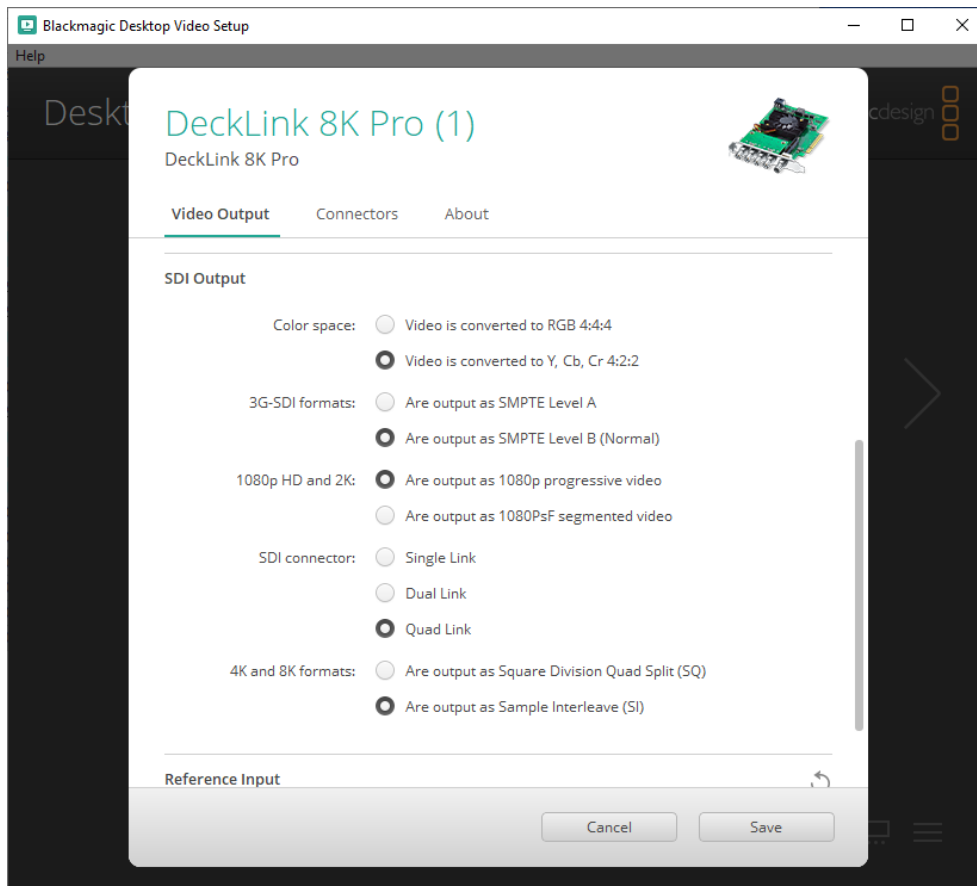
After the configuration is complete, click "Save" to apply the configuration to the playout server



Decklink output configuration

The SDI-Output from the Decklink or AJA-Card can be set in Single, Dual or Quad-Link depending on the resolution and monitoring mode

4K and 8K Video can be output either in SQD mode (Square Division Quad Splitt) or in 2SI (2 Samples Interleave)

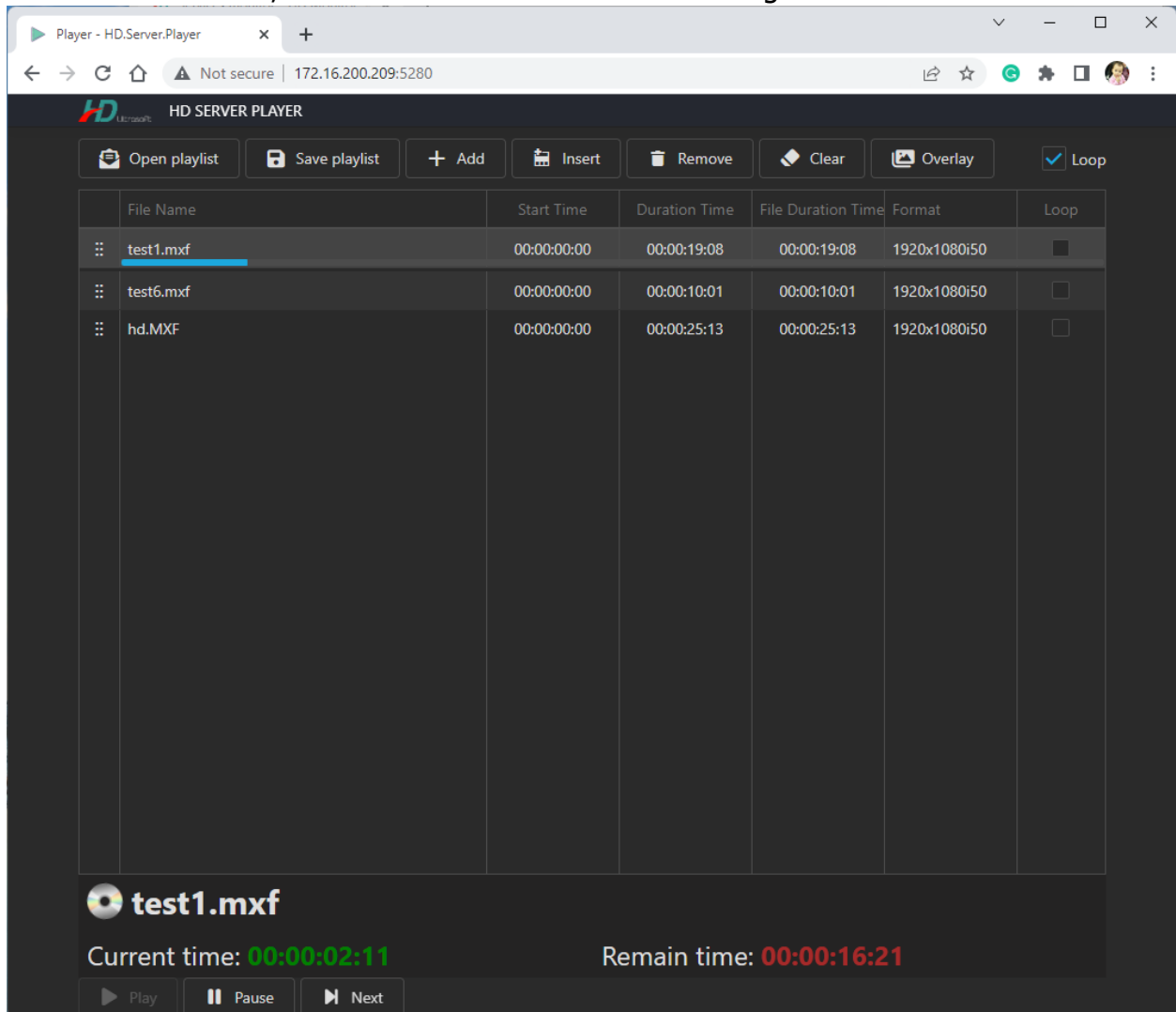


IV. PLAYOUT PLAYER SETTING

Playout Player is software that provides a web interface to schedule, control file playback and insert images/videos on the playout server.

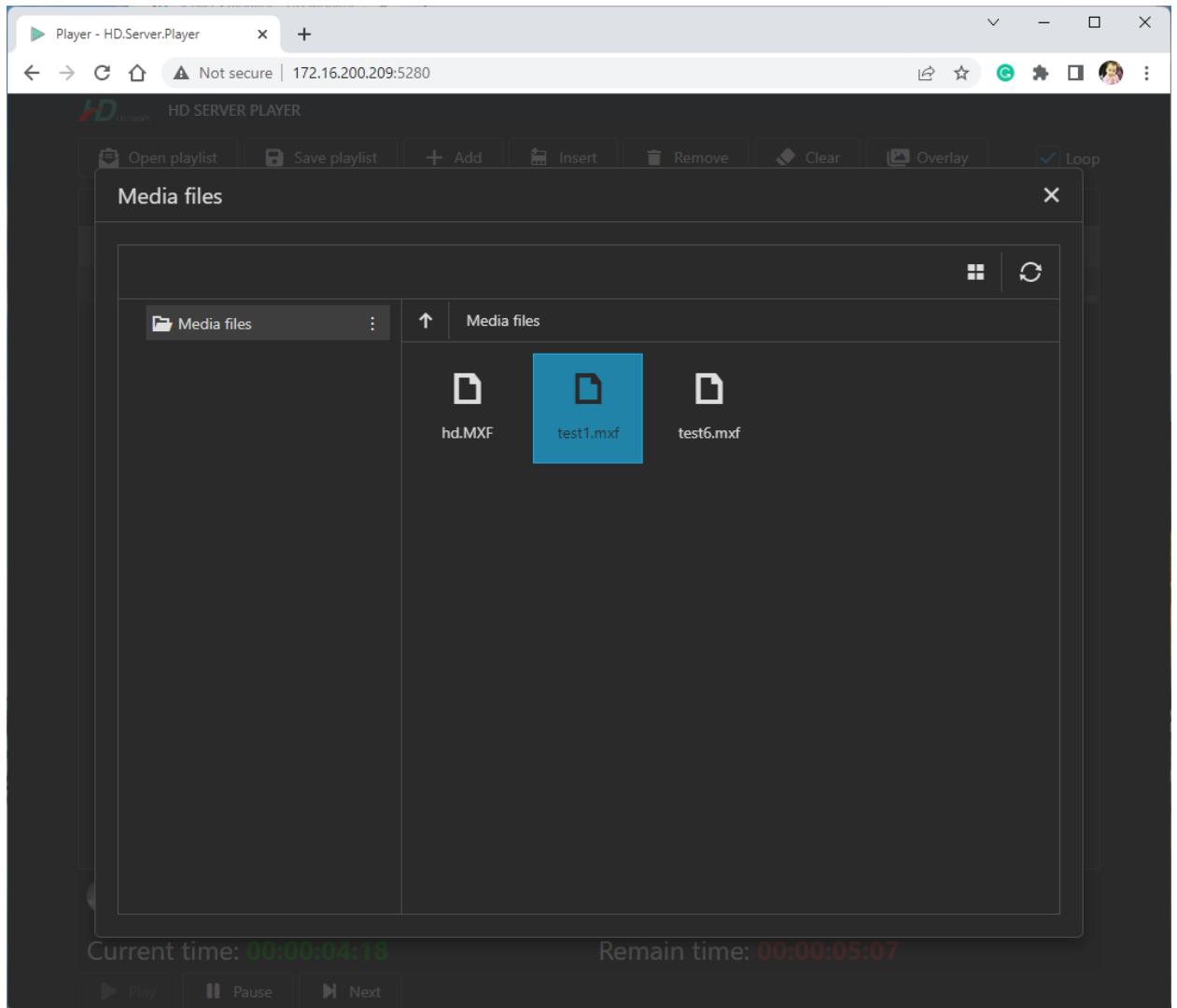
The software can be run as a standalone console or hosted on IIS

To use the software, access the software's address through a web browser

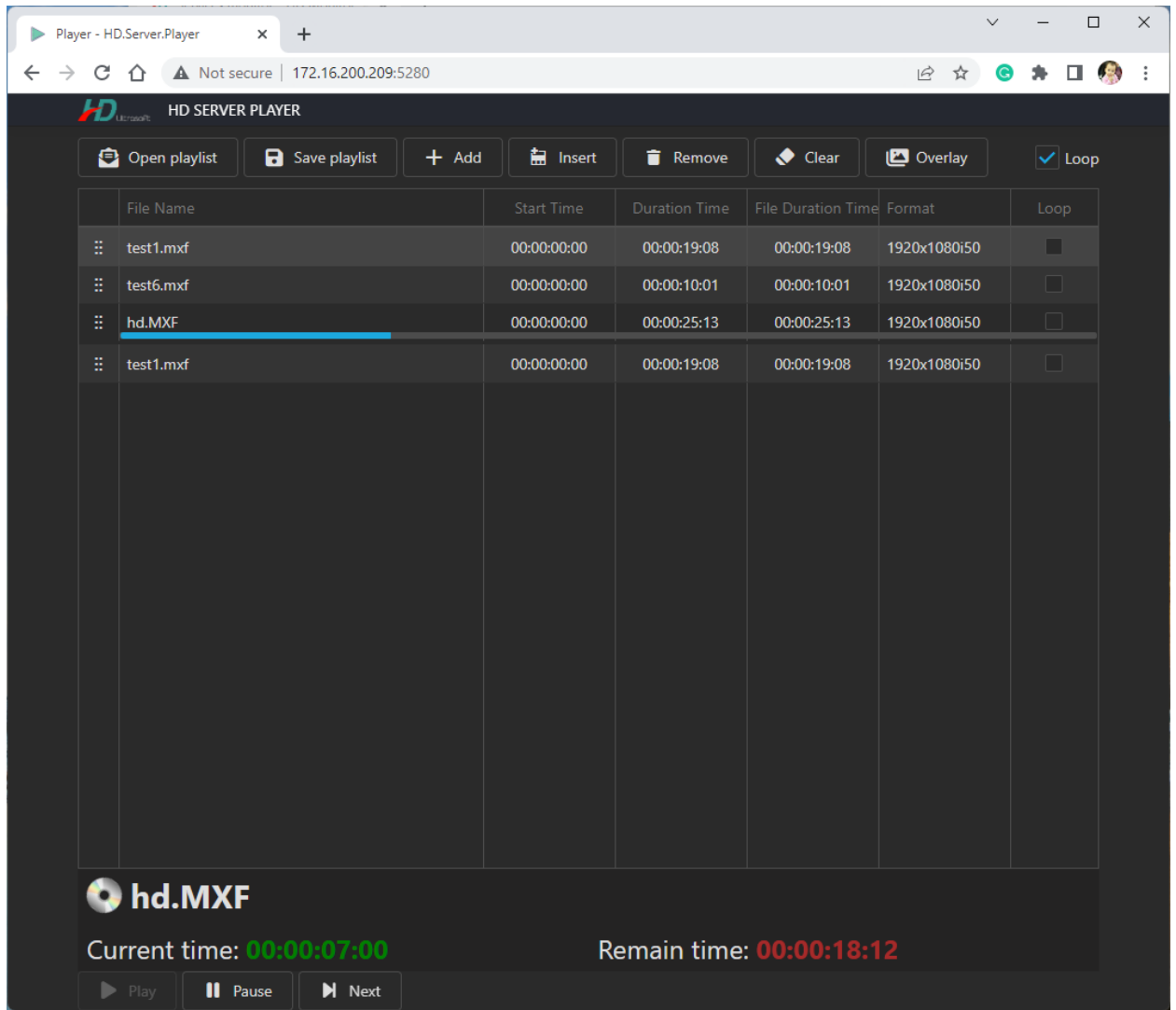


1. Add video files to the playlist

To add a video file to the playlist, click the Add button (+), the Media files window appears allowing you to select the file to add to the playlist.

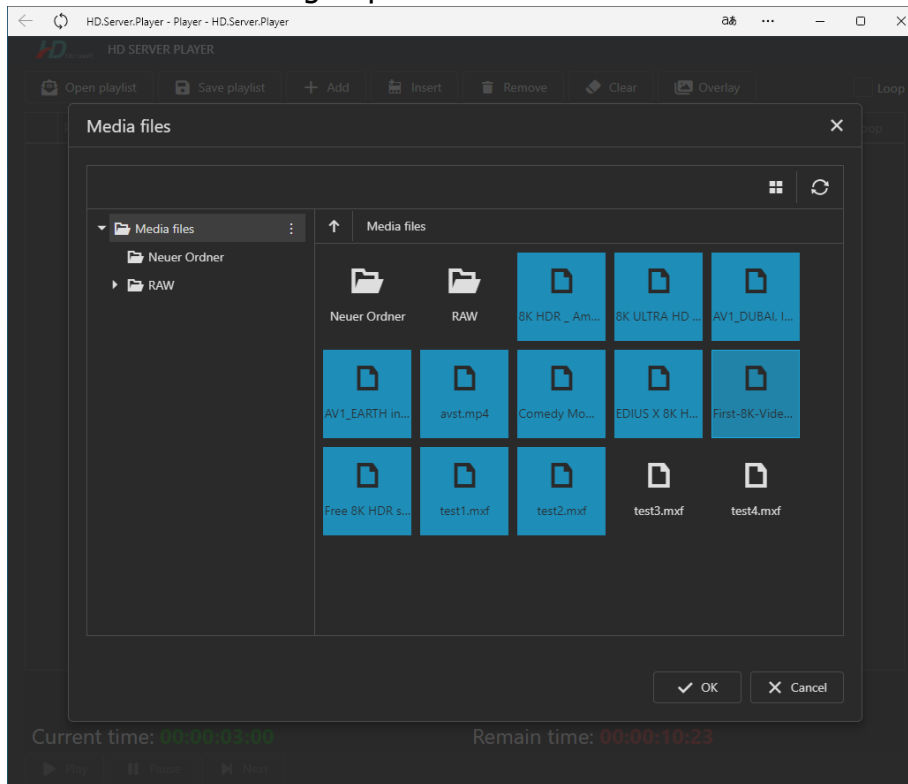


Double click on the file to add, the file will be added to the last position of the playlist.

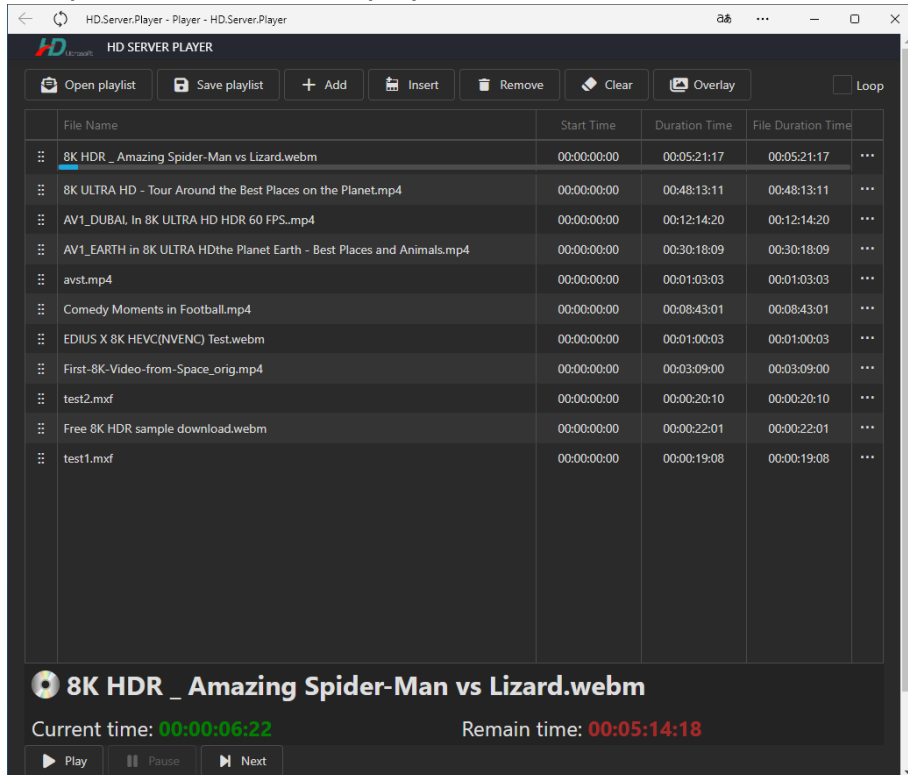


Do the same to add other files to the playlist

Or choose and mark group of files

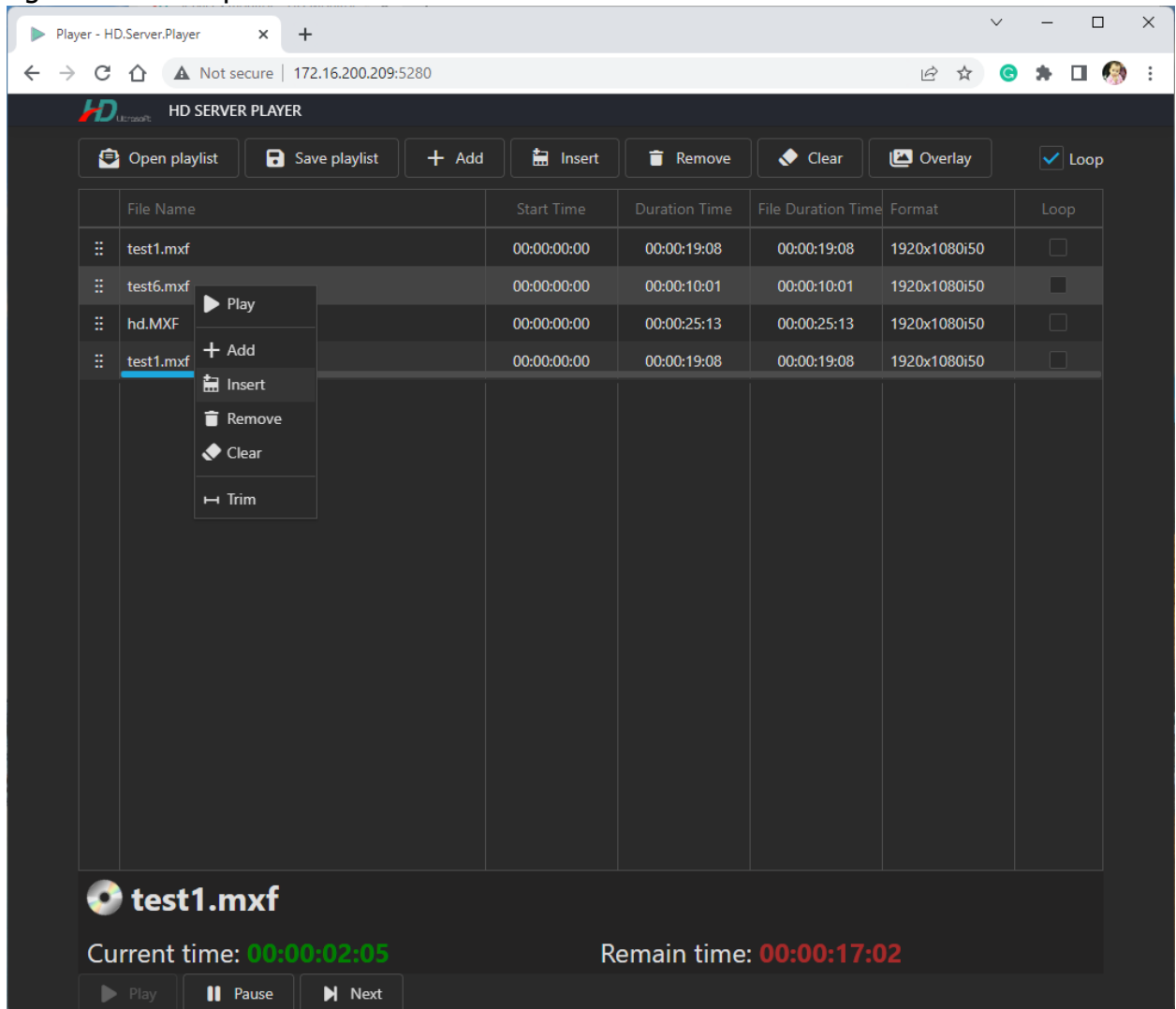


and press OK to create a playlist

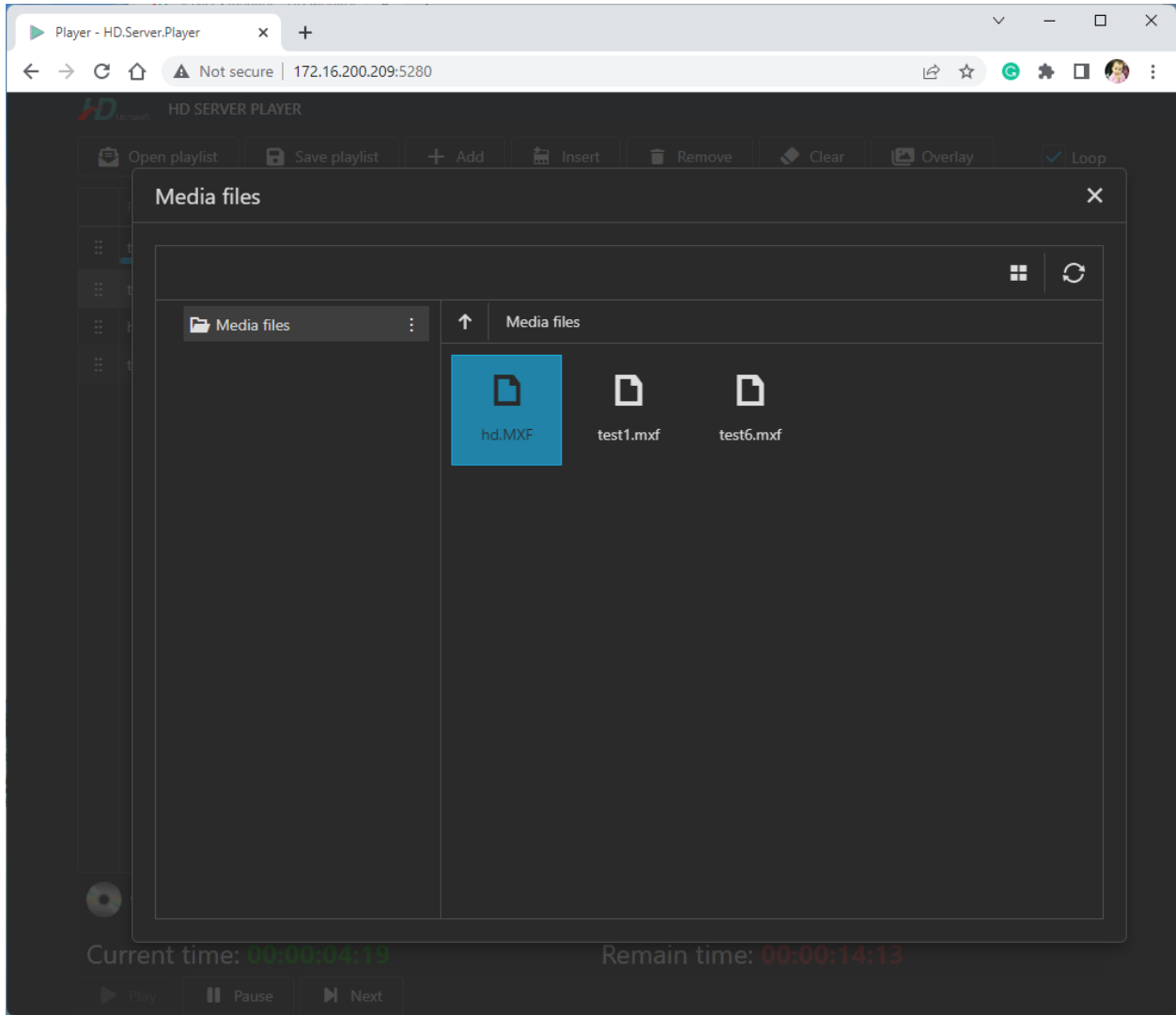


1. Insert video files into the playlist

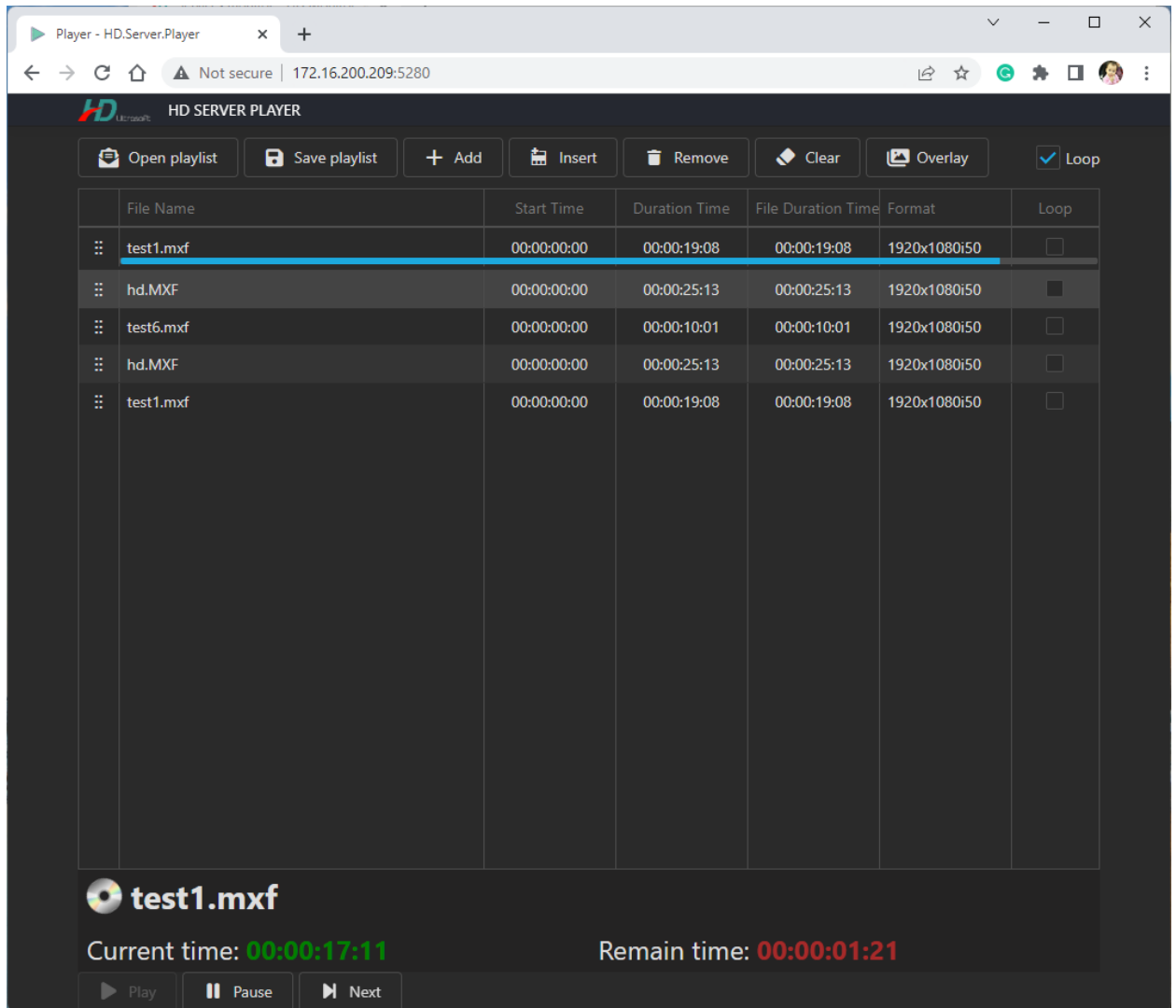
Select the position to insert and then click the "Insert" button on the toolbar, or right-click the clip to insert and select "Insert"



Similar to when adding a new file, the Media files window will appear and allow you to select the file you want to insert. Double-click the file to insert it to insert it into the playlist at the selected location.



As a result, the selected file will be inserted at the selected location on the playlist.



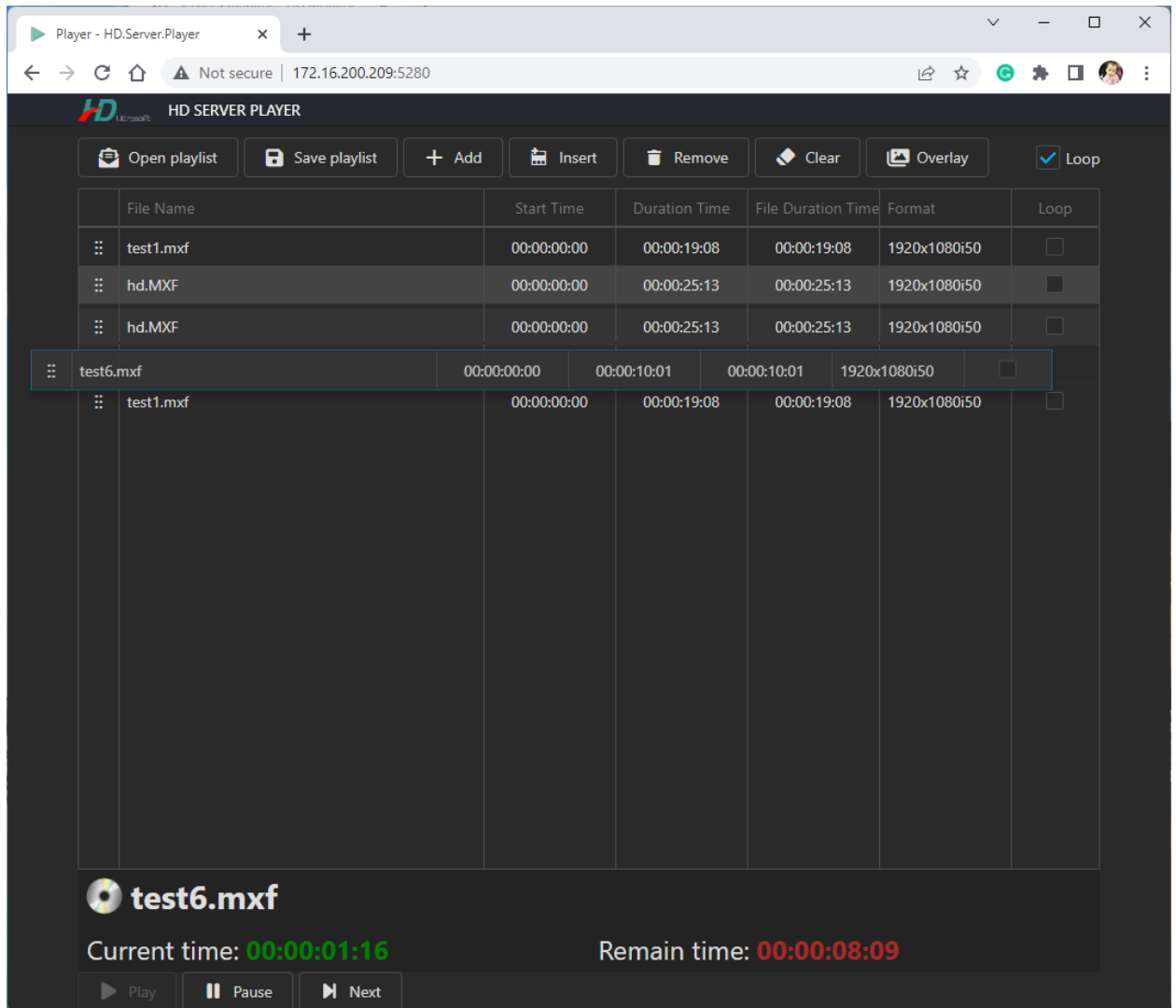
The screenshot shows the HD Server Player web interface. At the top, there is a browser window with the address bar showing "Not secure | 172.16.200.209:5280". The interface includes a toolbar with buttons for "Open playlist", "Save playlist", "Add", "Insert", "Remove", "Clear", "Overlay", and a checked "Loop" option. Below the toolbar is a table with the following data:

	File Name	Start Time	Duration Time	File Duration Time	Format	Loop
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input checked="" type="checkbox"/>
⋮	test6.mxf	00:00:00:00	00:00:10:01	00:00:10:01	1920x1080i50	<input type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input type="checkbox"/>
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>

Below the table, the current file "test1.mxf" is displayed with a play button icon. The current time is shown as "00:00:17:11" in green, and the remain time is "00:00:01:21" in red. At the bottom, there are "Play", "Pause", and "Next" buttons.

2. Organize playlist

To move a file on the playlist, click and hold the mouse in the first box of the clip, drag it to the desired position, and then release the mouse button.



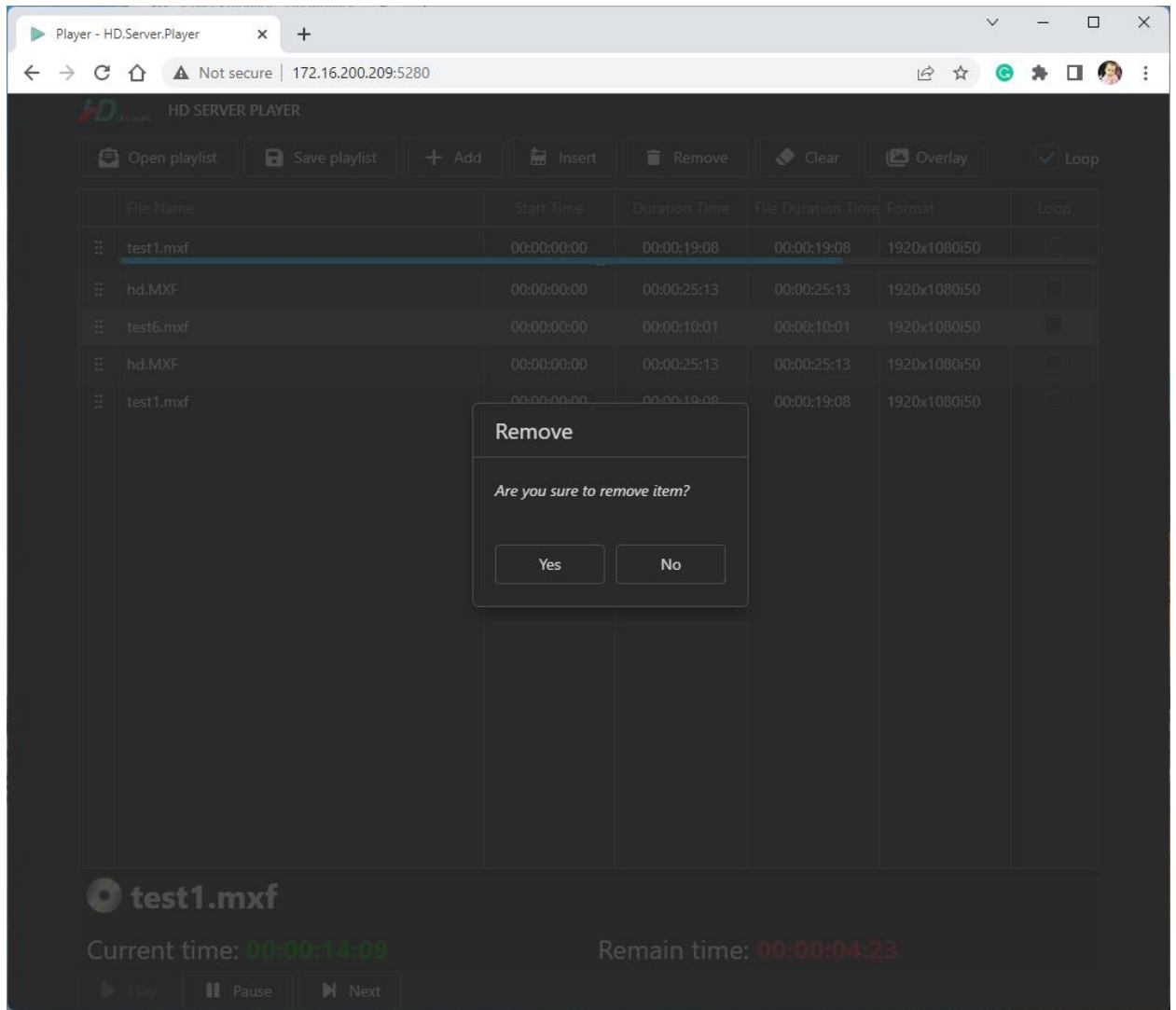
The screenshot shows the HD SERVER PLAYER web interface. At the top, there is a browser window with the address bar showing "Not secure | 172.16.200.209:5280". The interface has a dark theme and includes a toolbar with buttons: "Open playlist", "Save playlist", "+ Add", "Insert", "Remove", "Clear", "Overlay", and a checked "Loop" checkbox. Below the toolbar is a table listing playlist items:

	File Name	Start Time	Duration Time	File Duration Time	Format	Loop
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input checked="" type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input type="checkbox"/>
⋮	test6.mxf	00:00:00:00	00:00:10:01	00:00:10:01	1920x1080i50	<input type="checkbox"/>
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>

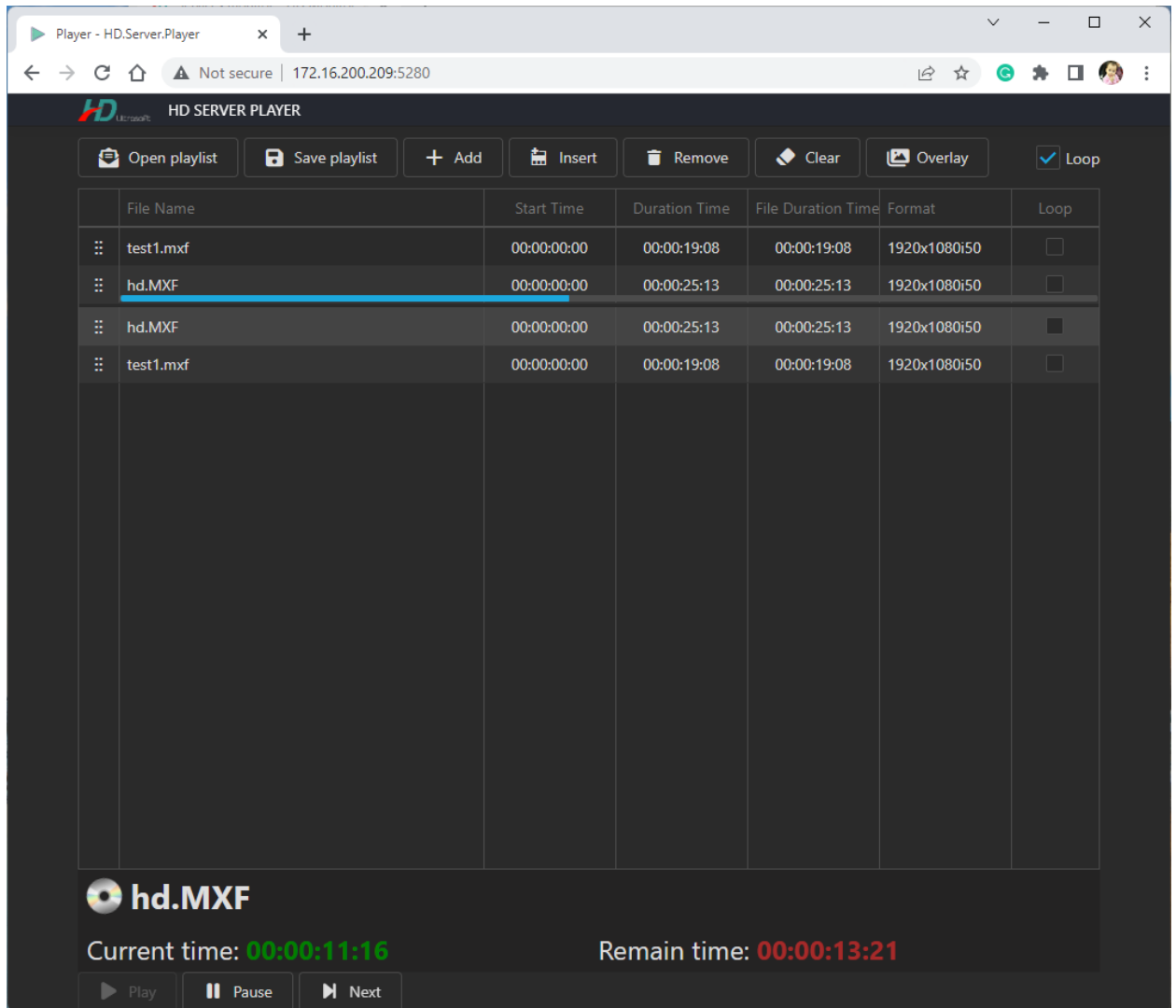
Below the table, the current file "test6.mxf" is displayed with a play button icon. The current time is shown as "00:00:01:16" in green, and the remain time is "00:00:08:09" in red. At the bottom, there are "Play", "Pause", and "Next" buttons.

3. Delete video files from playlist

To delete a file from the playlist, select the file on the playlist and then click the "Remove" button on the toolbar, or right-click it and select "Remove".



Confirm the removing, the file will be deleted from the playlist

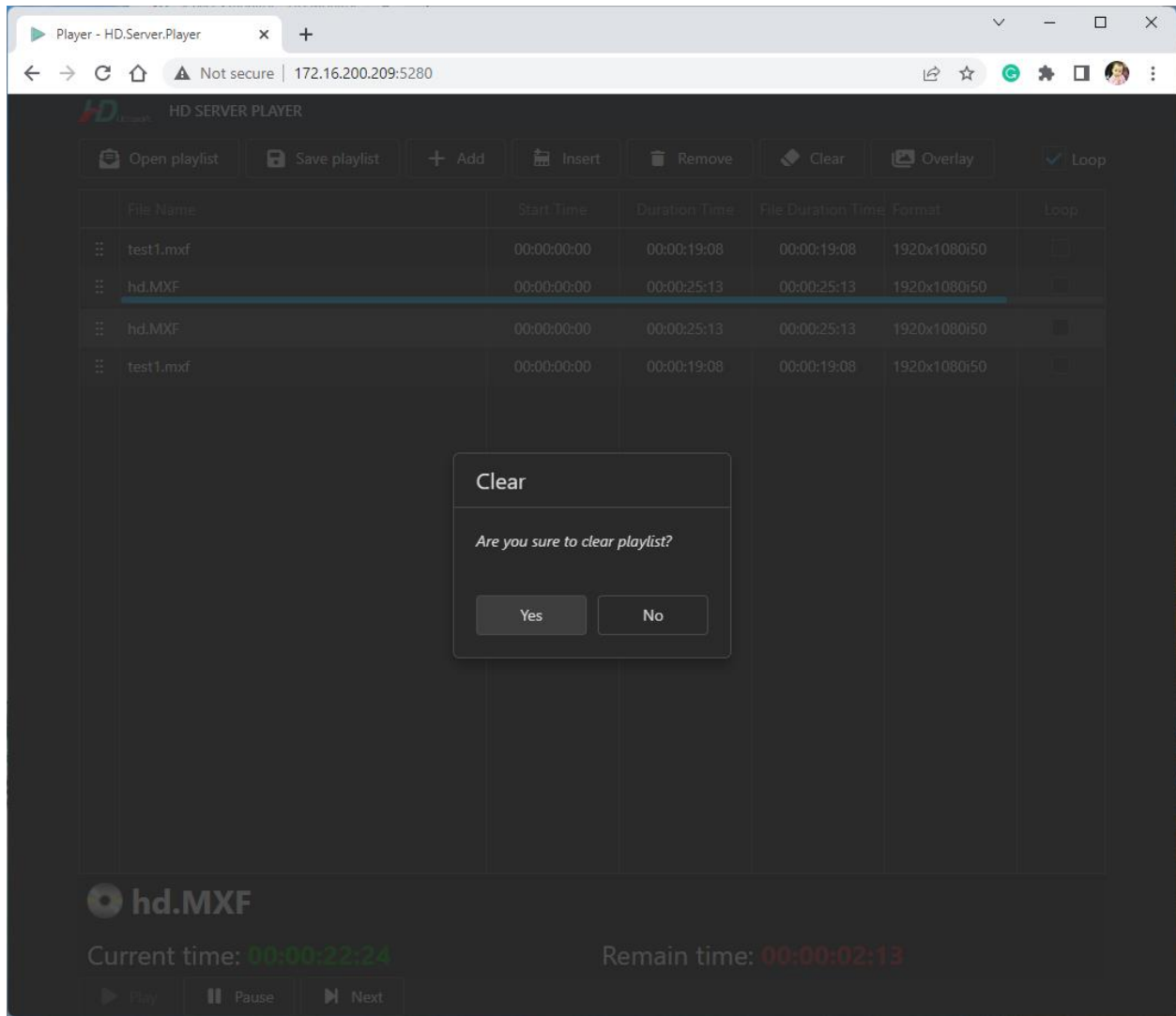


	File Name	Start Time	Duration Time	File Duration Time	Format	Loop
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input type="checkbox"/>
⋮	hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input checked="" type="checkbox"/>
⋮	test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>

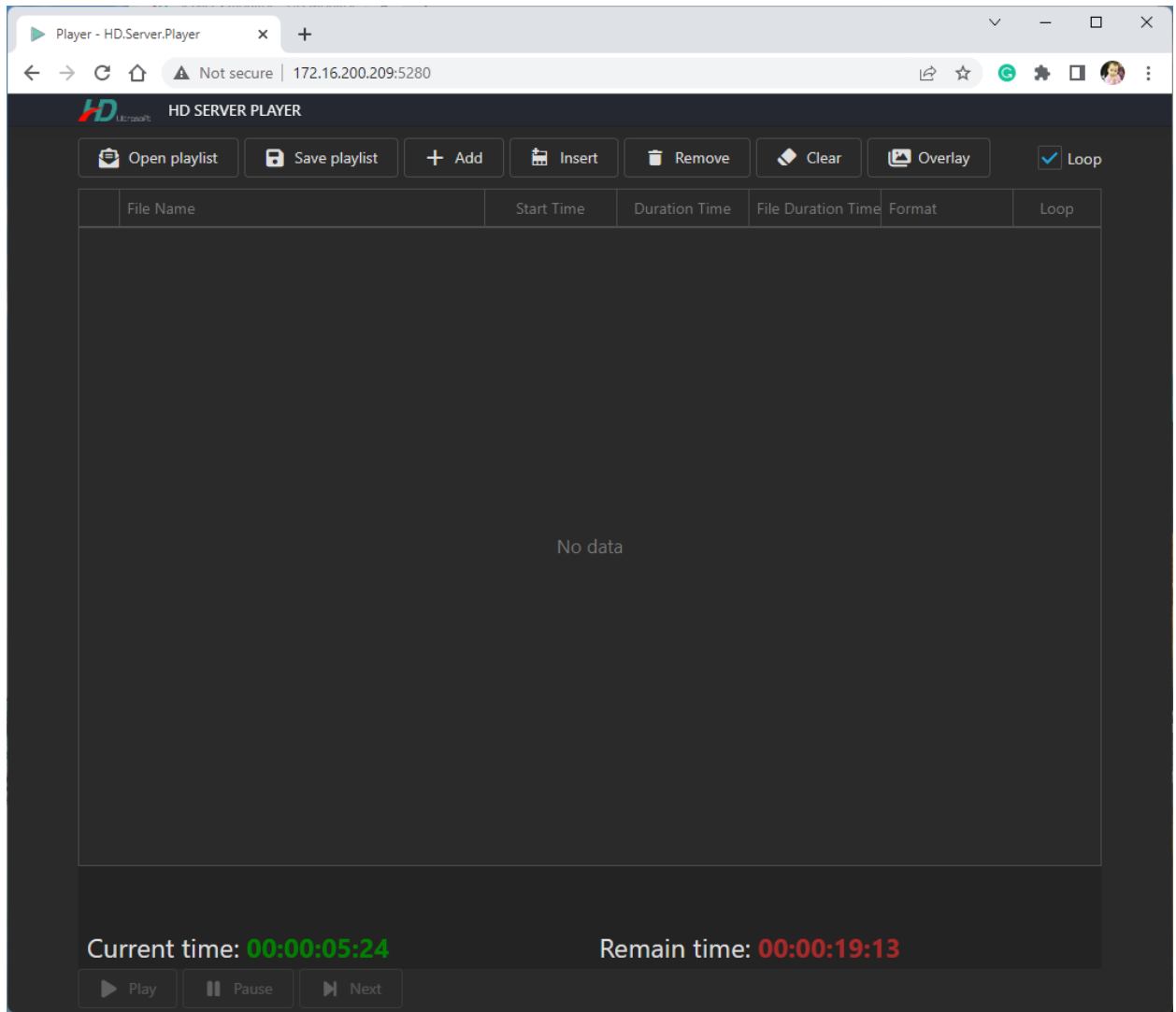
hd.MXF
 Current time: **00:00:11:16** Remain time: **00:00:13:21**
 Play Pause Next

4. Delete the entire playlist

The entire playlist can be quickly deleted by clicking the “Clear” button on the toolbar



Confirm the deletion, the playlist will be emptied



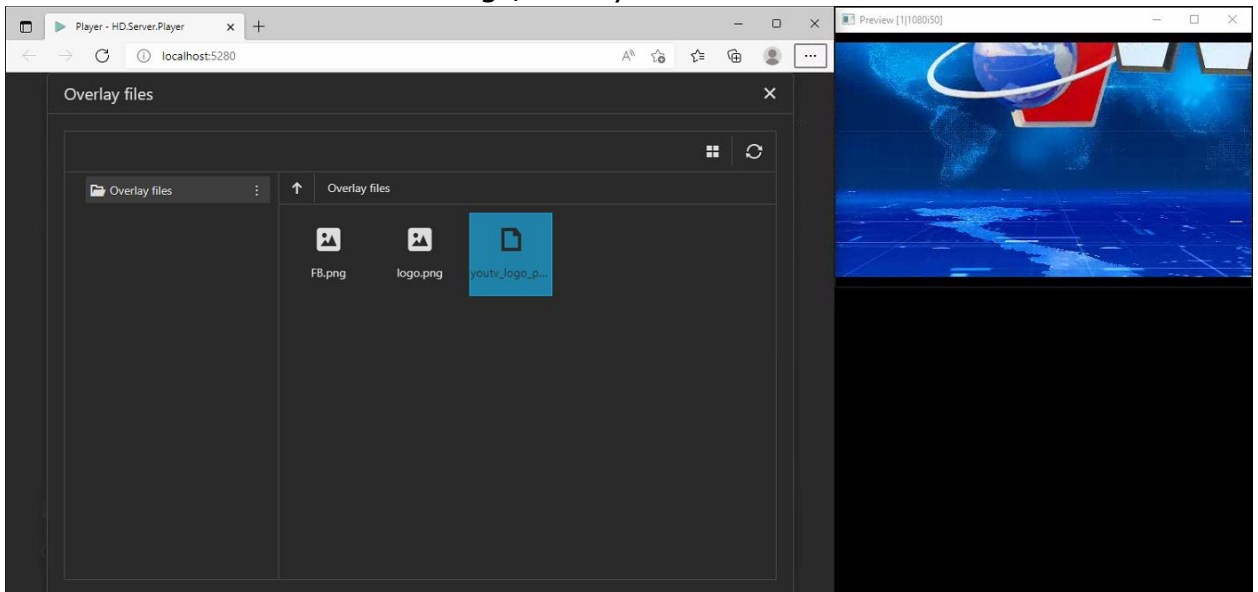
5. Insert images/videos on air

During broadcasting, the output signal can be inserted with images/videos.

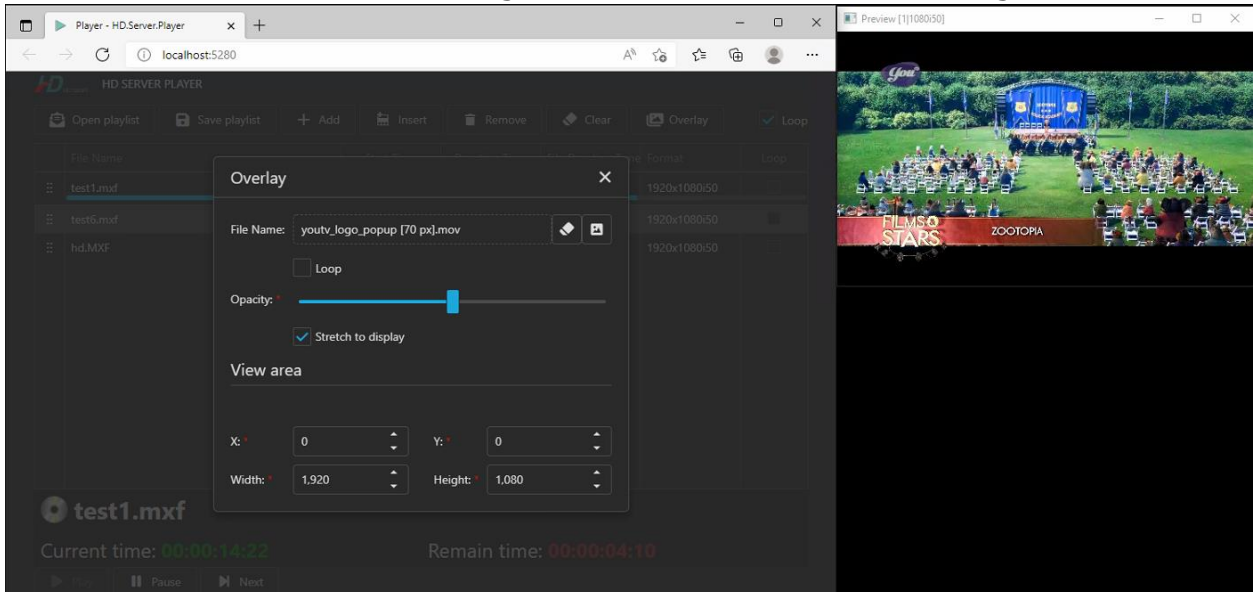
To do this, select the “Overlay” function on the toolbar

An overlay manager will appear allowing you to control the overlay over the signal

- ✓ File name: image/video files need to be inserted into the output signal. Click the "Browse" button to select the image/video you want to insert

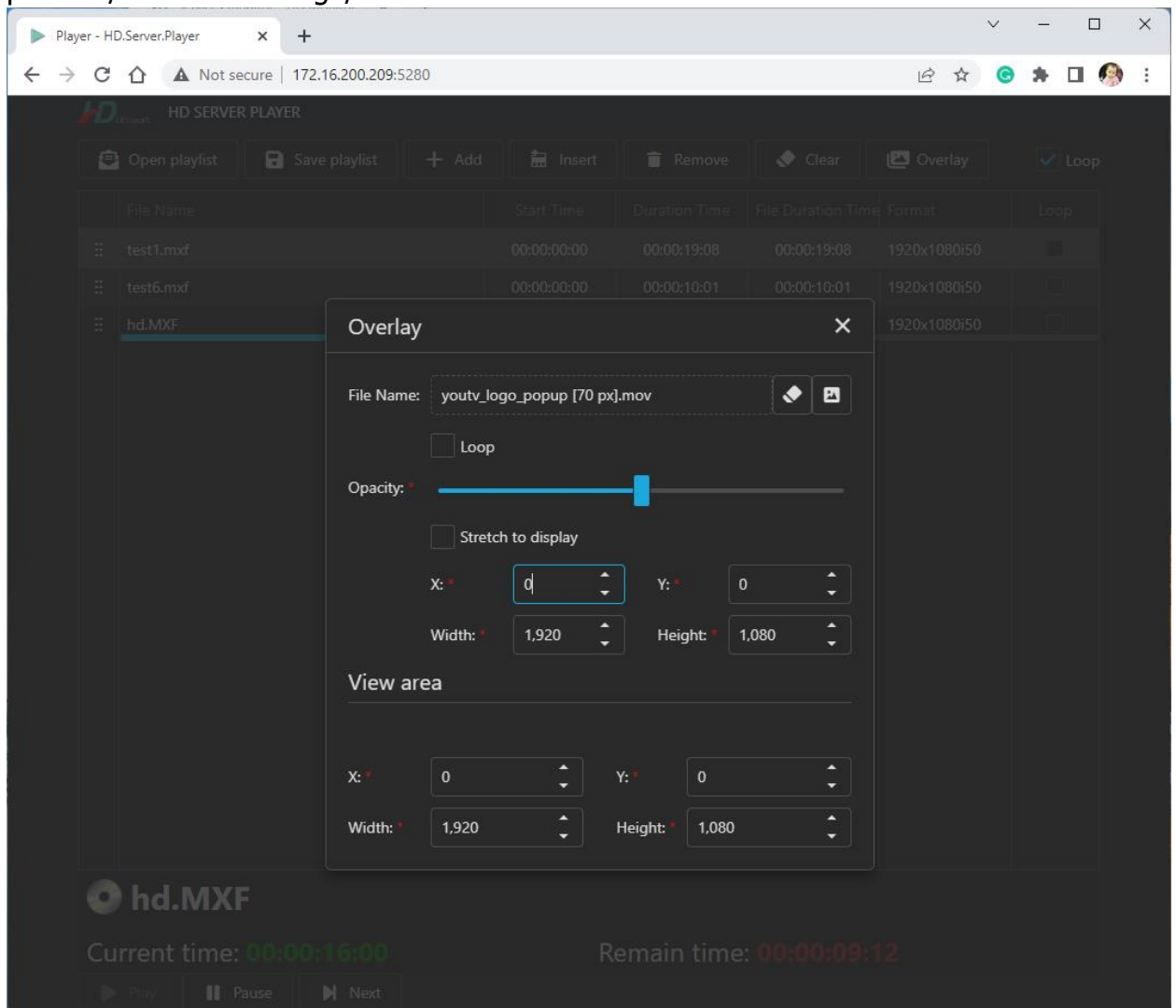


After the selection is done, the image/video will be inserted into the signal



- ✓ Loop: Looping video playback
- ✓ Opacity: Adjust the degree of opening the image/video to be inserted
- ✓ Stretch to display: If the image/video needs to be inserted export in the same format as the output signal. If not, need to remove this mode to adjust the

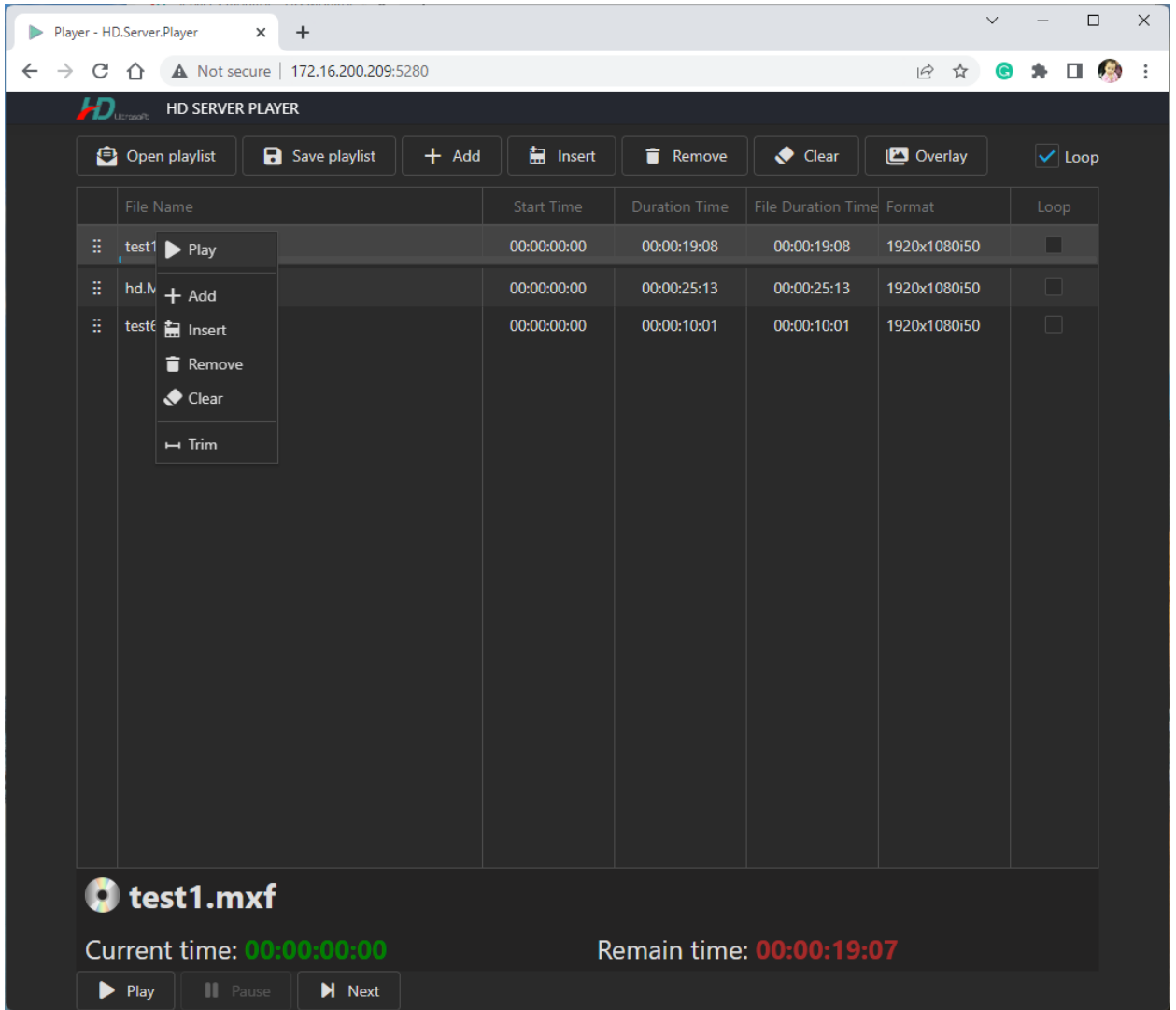
position/size of the image/video to be inserted



- ✓ View area: Set the area where the image/video to be inserted is allowed to be displayed

6. Play 1 file on the playlist

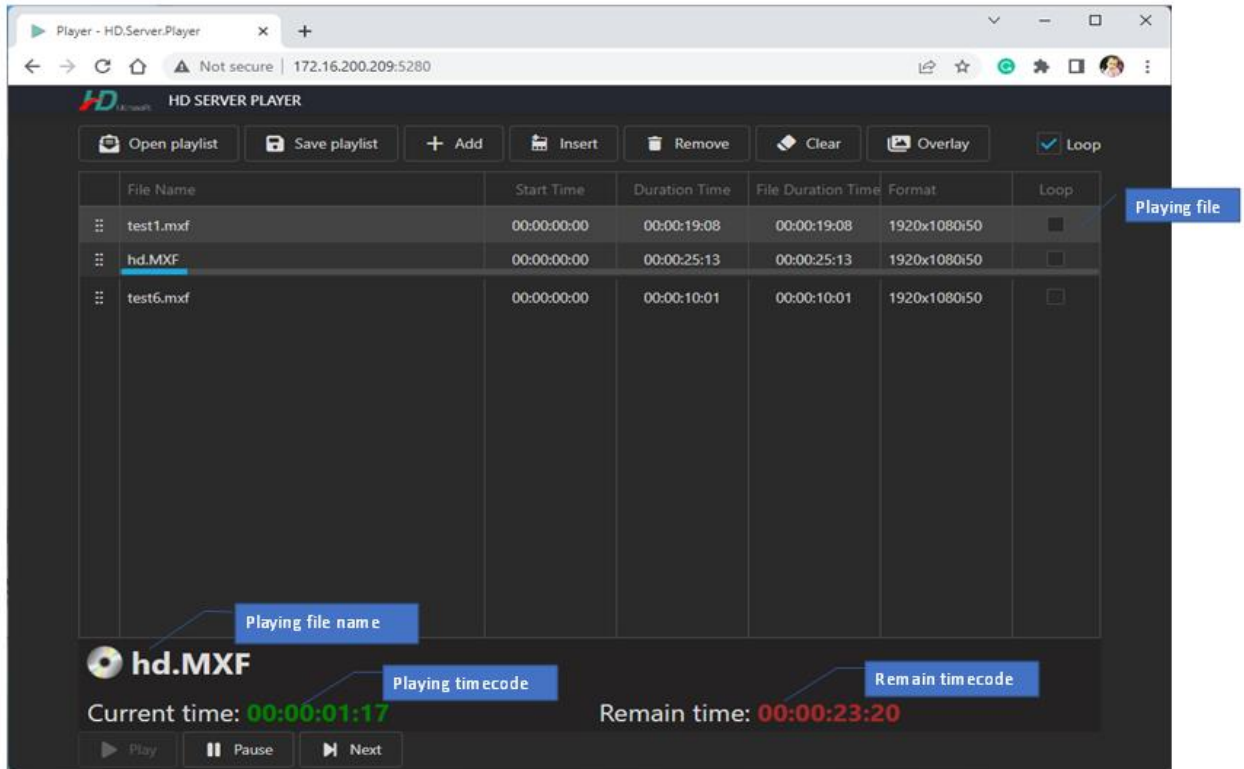
To play a file on the playlist, right-click the file and select "Play"



The screenshot shows the HD SERVER PLAYER web interface. At the top, there are navigation buttons: Open playlist, Save playlist, Add, Insert, Remove, Clear, Overlay, and a checked Loop button. Below these is a table with the following columns: File Name, Start Time, Duration Time, File Duration Time, Format, and Loop. The table contains three rows of data:

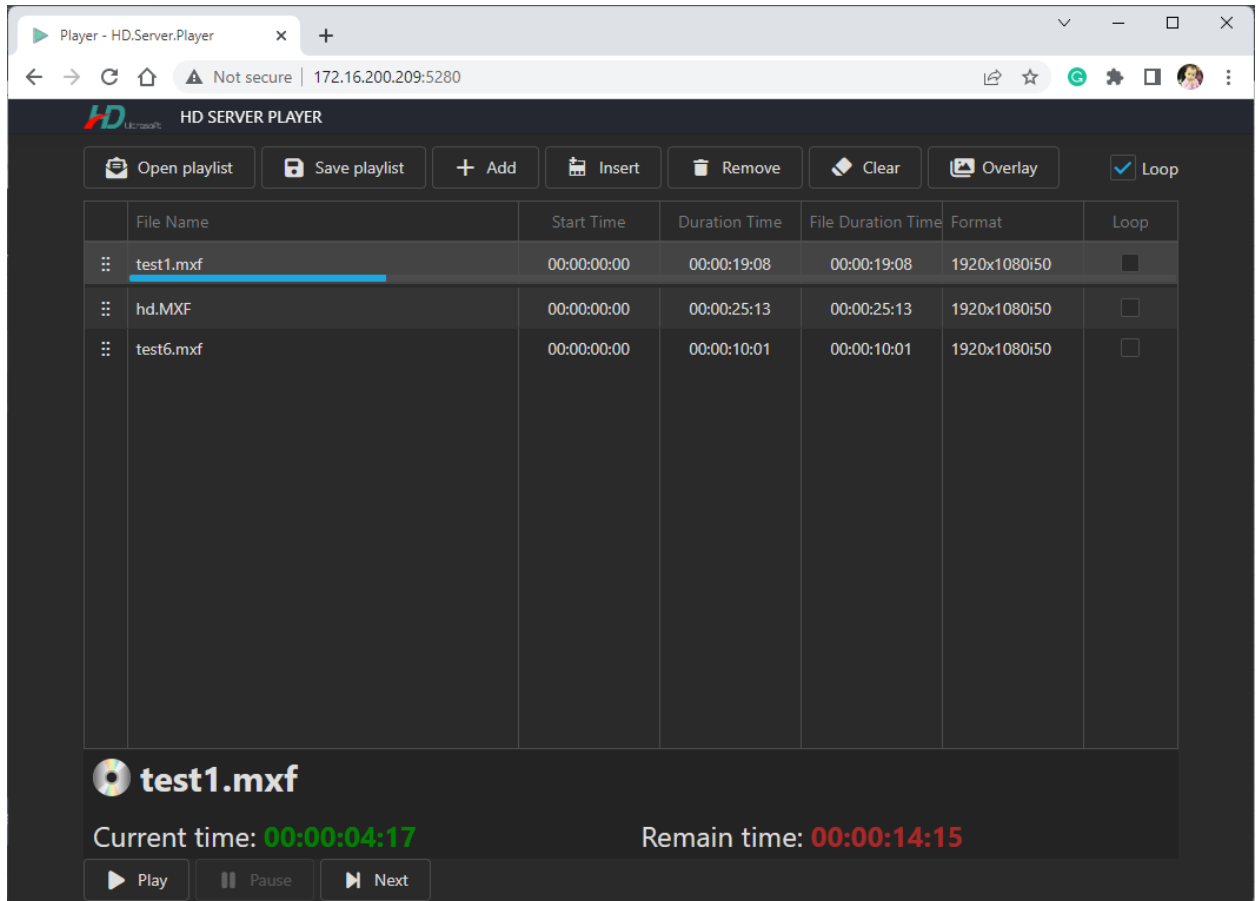
File Name	Start Time	Duration Time	File Duration Time	Format	Loop
test1	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>
hd.N	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input type="checkbox"/>
test6	00:00:00:00	00:00:10:01	00:00:10:01	1920x1080i50	<input type="checkbox"/>

A context menu is open over the first row, showing options: Play, Add, Insert, Remove, Clear, and Trim. At the bottom of the interface, the current file is 'test1.mxf'. The current time is 00:00:00:00 and the remain time is 00:00:19:07. Playback controls for Play, Pause, and Next are visible at the very bottom.



7. Pause

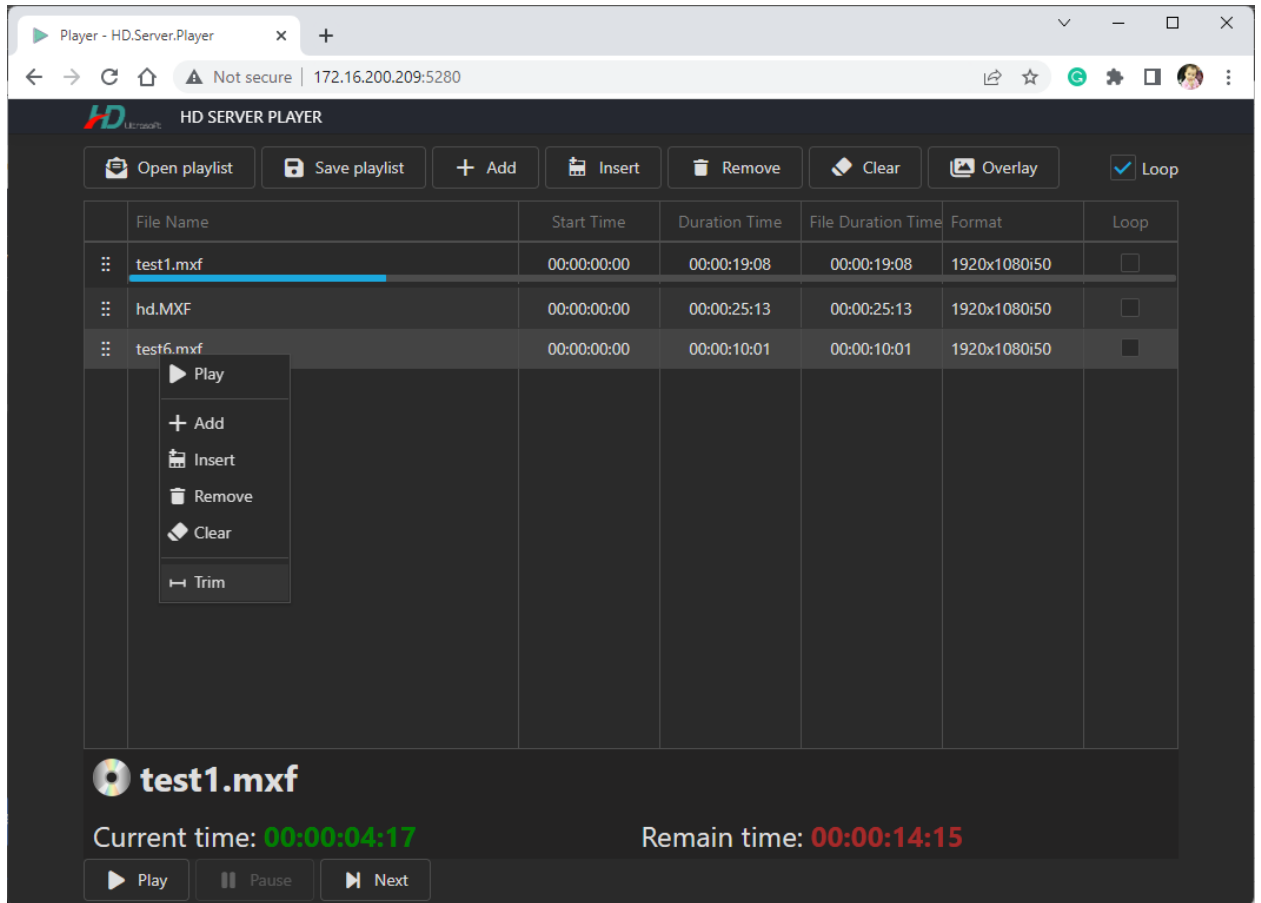
While broadcasting, to pause press the "Pause"



To resume playback at the stop position, press the "Play".

8. Cut/Trim 1 segment on 1 file to play

For cutting a segment on the file to broadcast by right-clicking on the file on the playlist, choosing "Trim"



Player - HD.Server.Player

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HD SERVER PLAYER

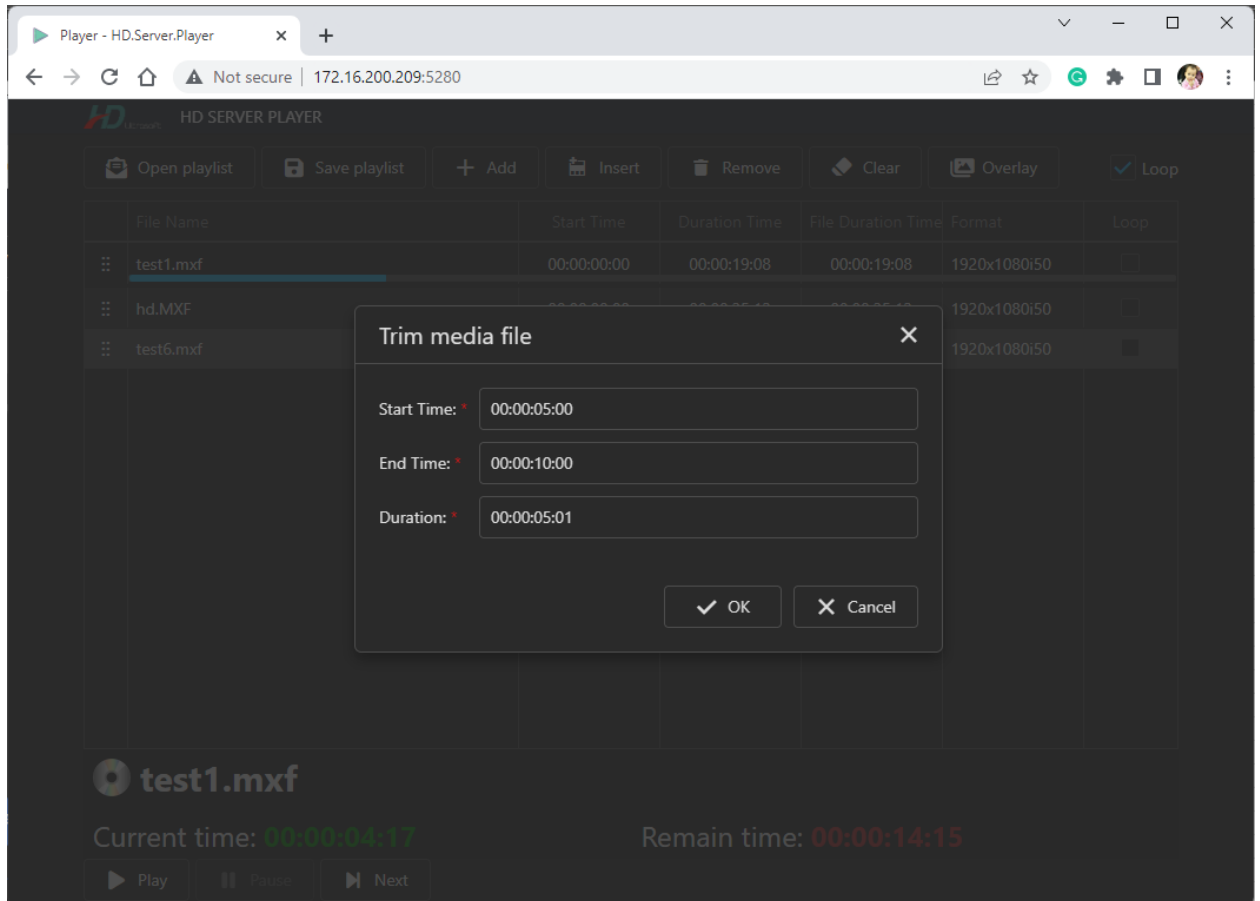
Open playlist Save playlist + Add Insert Remove Clear Overlay Loop

File Name	Start Time	Duration Time	File Duration Time	Format	Loop
test1.mxf	00:00:00:00	00:00:19:08	00:00:19:08	1920x1080i50	<input type="checkbox"/>
hd.MXF	00:00:00:00	00:00:25:13	00:00:25:13	1920x1080i50	<input type="checkbox"/>
test6.mxf	00:00:00:00	00:00:10:01	00:00:10:01	1920x1080i50	<input type="checkbox"/>

test1.mxf

Current time: 00:00:04:17 Remain time: 00:00:14:15

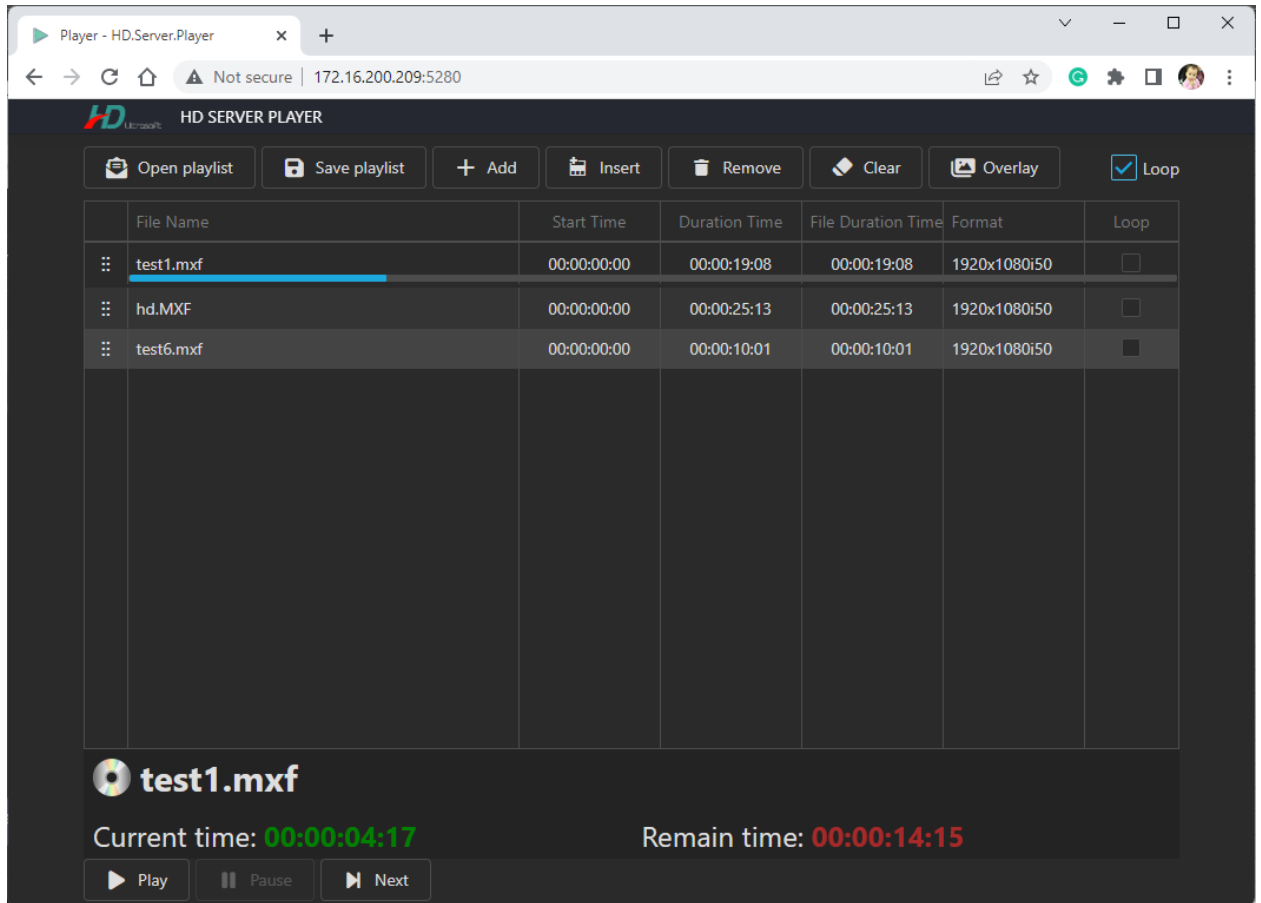
Play Pause Next



- ✓ Start time: Timecode broadcast starts
- ✓ End time: Timecode end of broadcast
- ✓ Duration: The length of the episode is broadcast

9. Playback schedule

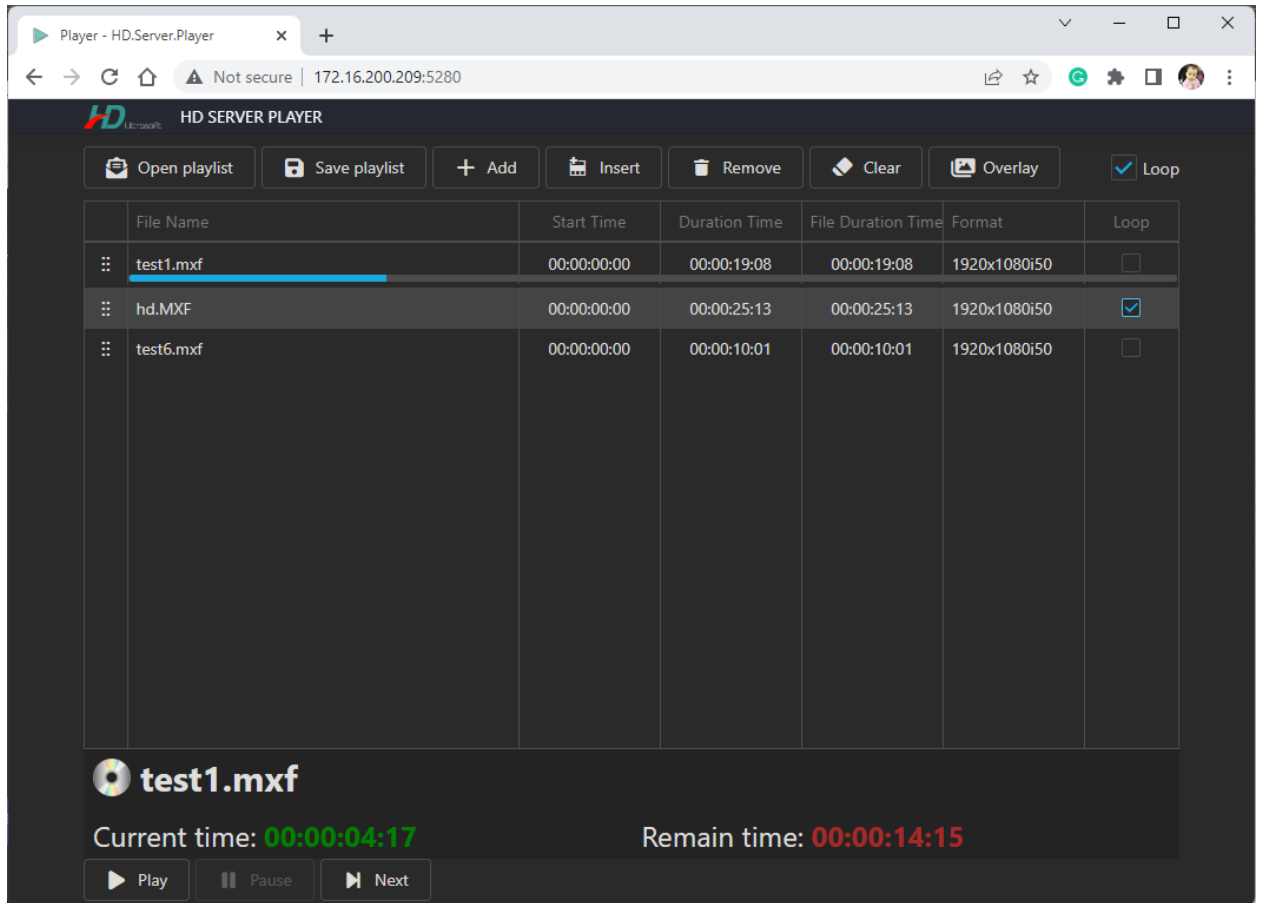
You can set the replay schedule by ticking "Loop" on the toolbar



At this time, when the last file is played, the server will jump to play again from the beginning of the schedule

10. Loop playback of video files

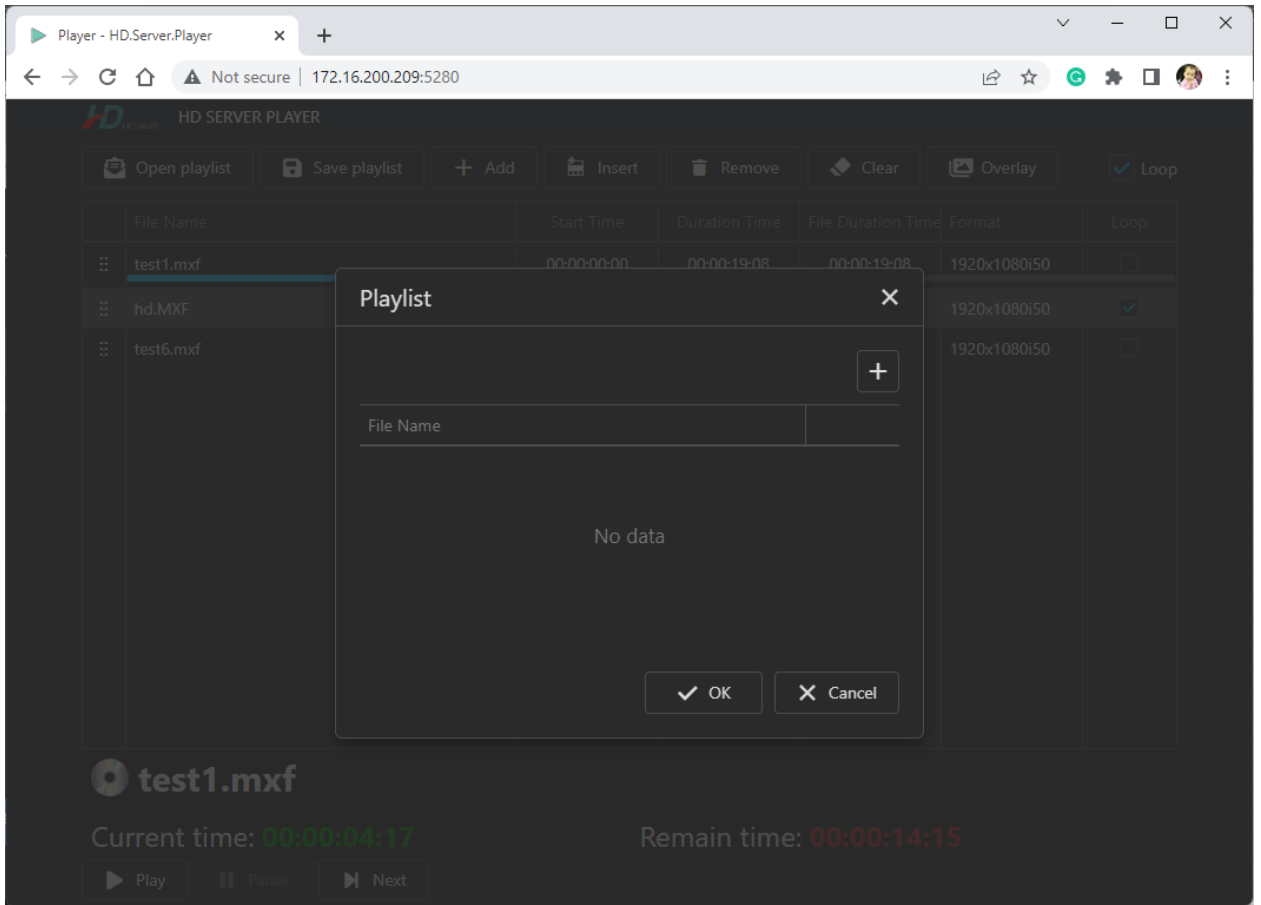
In addition to looping the entire playlist, you can loop each file on the playlist by ticking the "Loop" box on the file to repeat.



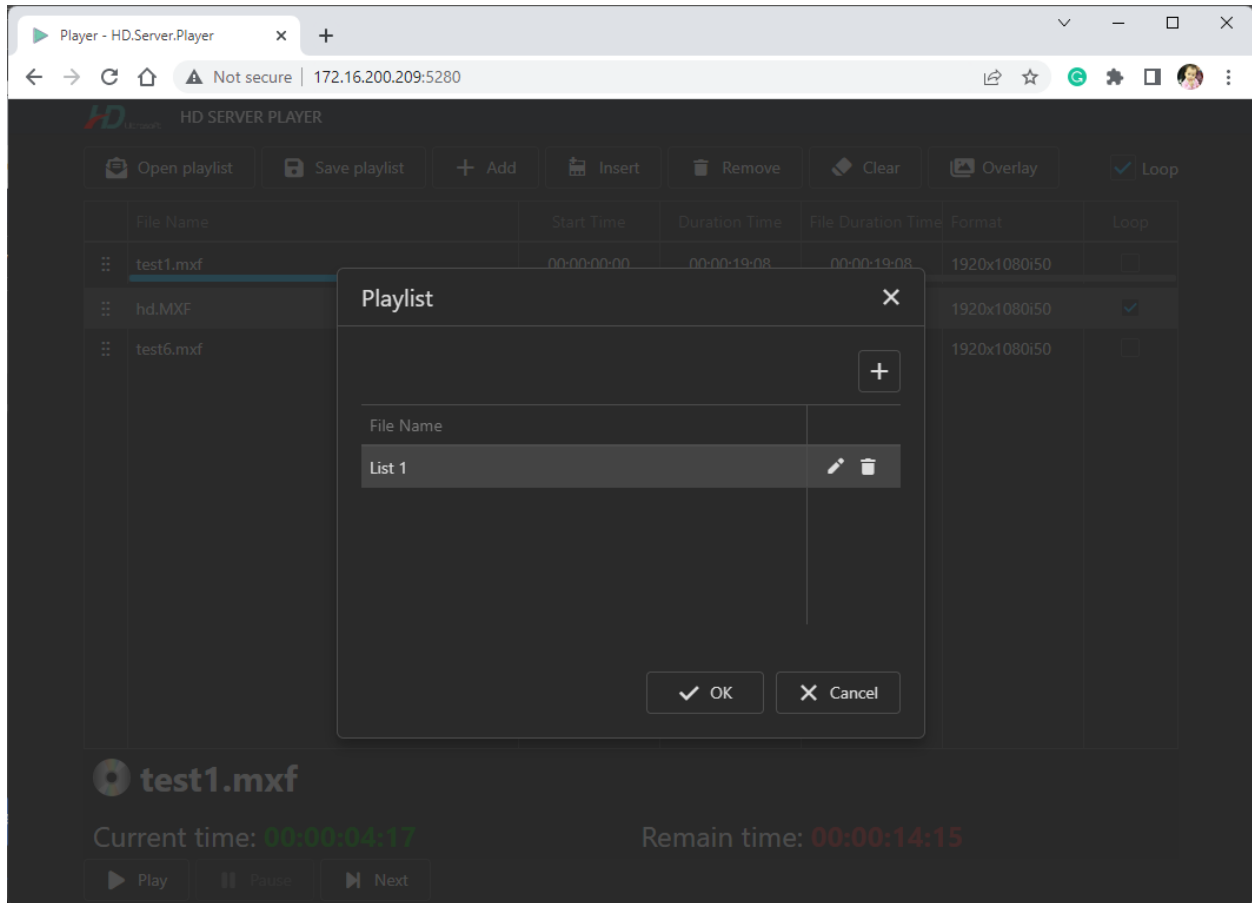
At this time, the file will be played repeatedly until the user jumps to play another file

11. Save playlist

After you have completed the schedule, you can save the schedule for later use by clicking the "Save playlist" button on the toolbar.

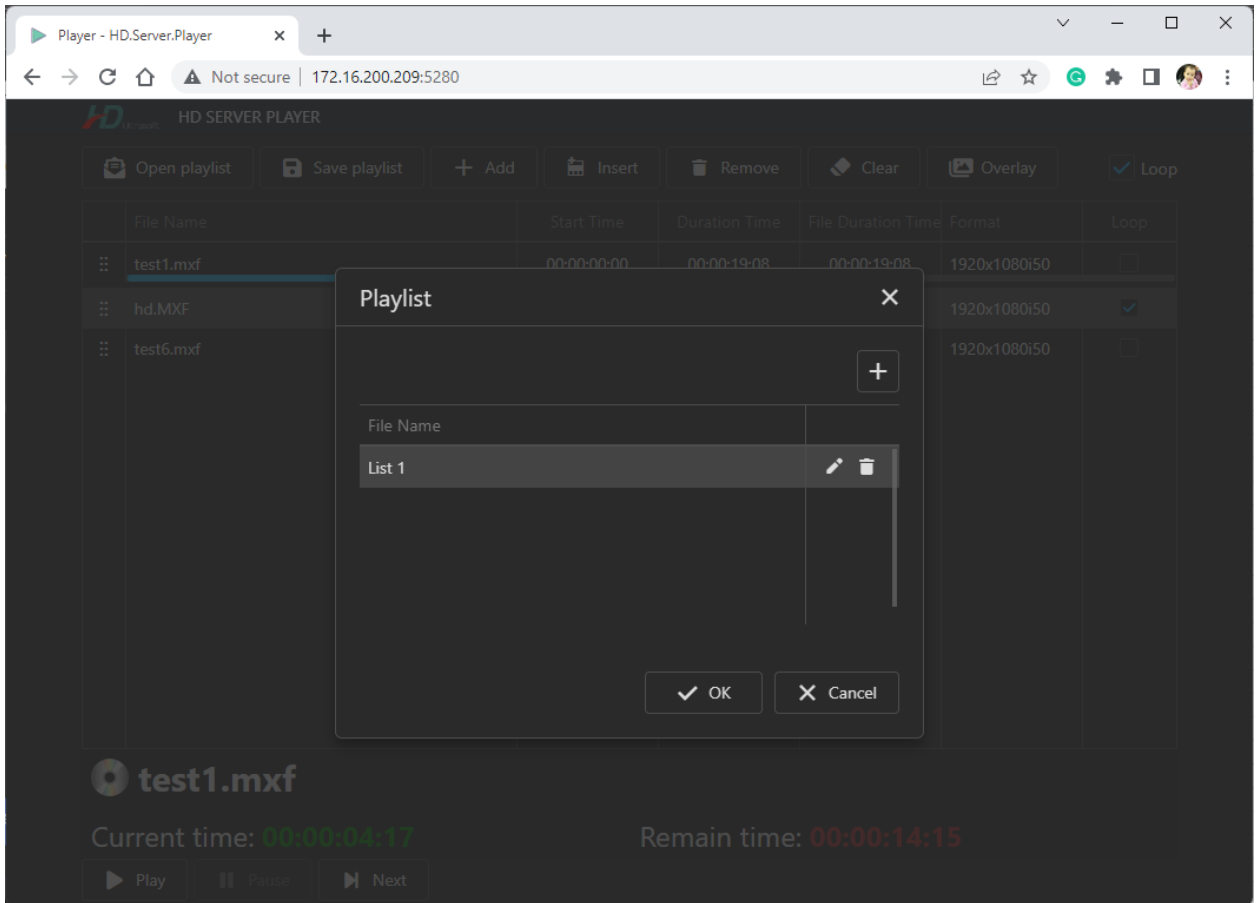


Create a new playlist or select the previous one to overwrite and then press OK

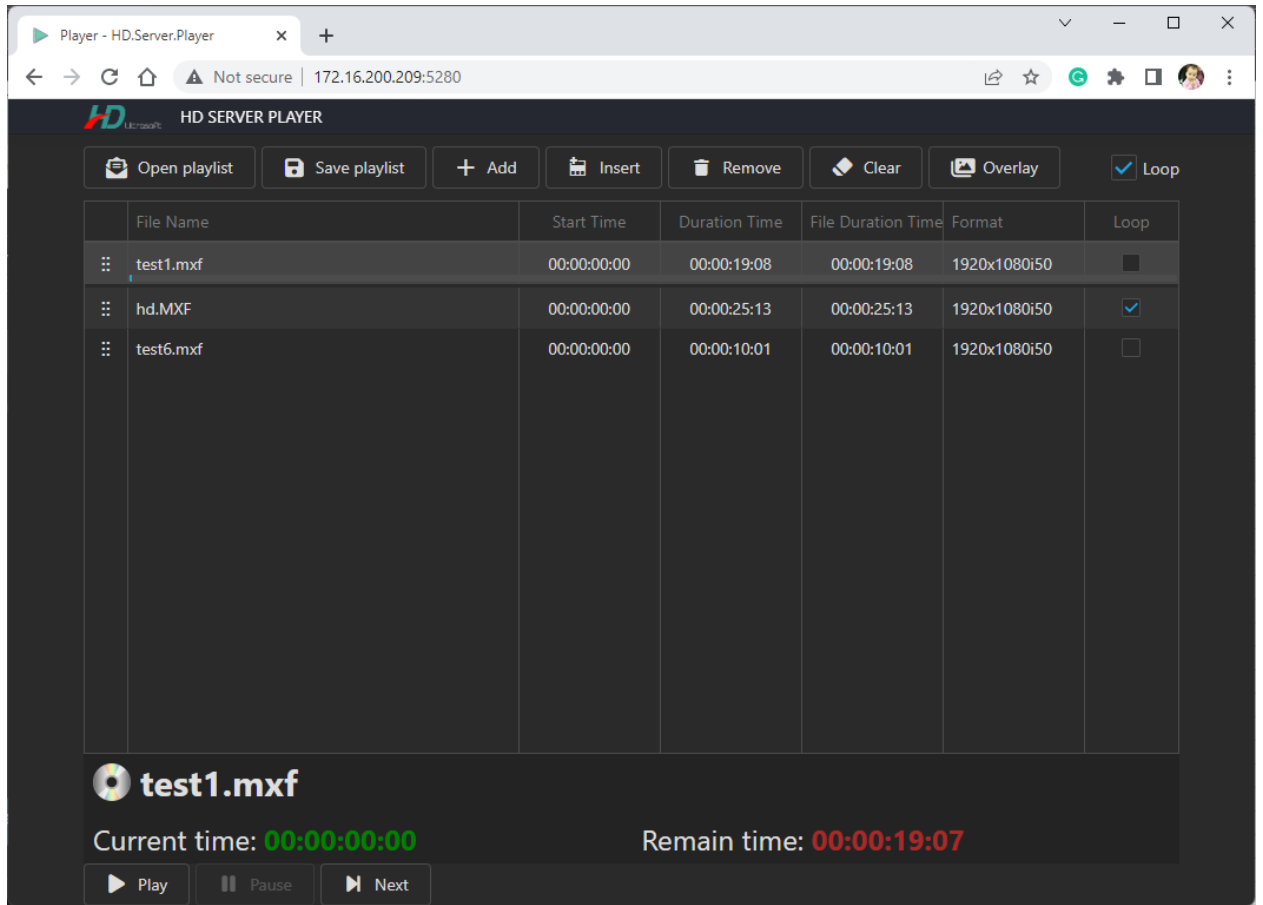


12. Open a saved calendar

To open a previously saved playlist, click the "Open playlist" button



Select the playlist to open, press the "OK" button. The playlist will be reloaded to the server



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