Live Stream MultiViewer
AV Monitoring Software

User Guide
with application description

Release:
Date: 20/08/2021

www.multiviewer.tv

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1. Introduction

This document describes the usage of the MultiViewer AV Monitoring application.
It is an FFmpeg based software application and throughout this document it shall be referred as MultiViewer.

2. General Description and Application

MultiViewer is a software application that monitors common streaming protocols RTP, UDP, RTSP, RTMP, HLS and TS over HTTP.

Its purpose is to receive and analysed up to 20 video streams or files pre-recorded as TS – arrange per your design layout grid and represent them in the full screen on the any resolution monitor. The system provides a real-time view of multiple video services coming from different streaming servers. Streams with different streaming protocols can be monitored in the same time. The app will restart the player automatically - if it will detect the freeze/black frames. It will replace missing stream with colour bars slate and as an option: will send email, create log and play alarm sound.
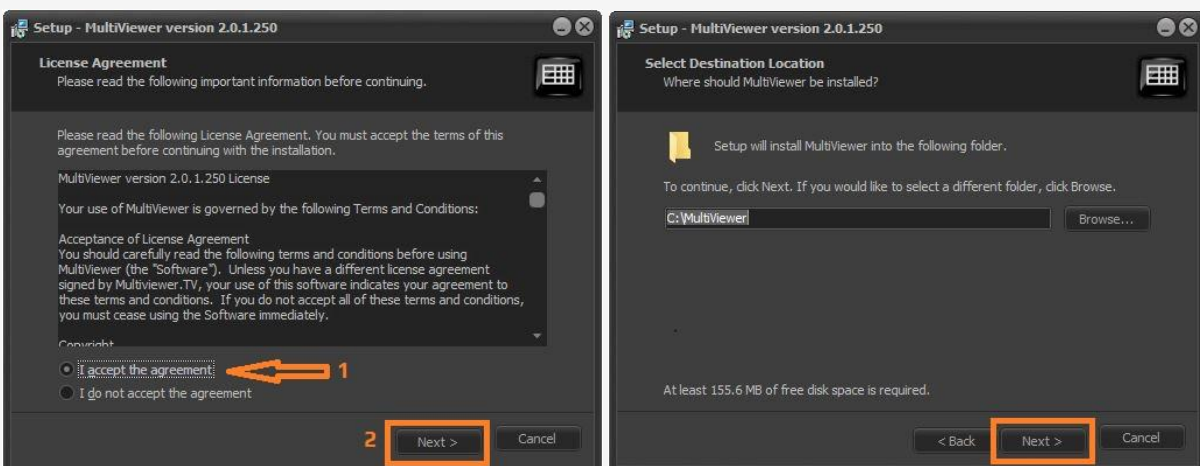
It could be useful for IPTV/OTT providers or anyone - who would like to monitor streams from satellites, IP camera feeds and playout systems, IPTV panels and other local or remote sources. MultiViewer can receive single program or multiplexed feeds (MPTS) from standard satellite or cable receivers. It will display these signals and will raise alerts for detected signal problems. This application based on FFmpeg libraries and FFmpeg is the leading multimedia framework, able to decode, encode, transcode, mux, demux, stream, filter and play pretty much anything that humans and machines have created. MultiViewer can easily adapt to your requirements with customizable interface that can be designed using a WYSIWYG layout editor and basic configuration utility, which allows creating or modifying current settings.

3. Good to know before getting started

MultiViewer is a simplified monitoring solution that has a bare minimum to display streams in mosaic mode, restart players when it's required and warn on detection of source problems. It doesn't do comprehensive TS Analysis, but it checks the health and performance of streams. To analyse transport streams, you may consider different software available on the market like TSReader Pro, StreamXpert, StreamGuru etc.
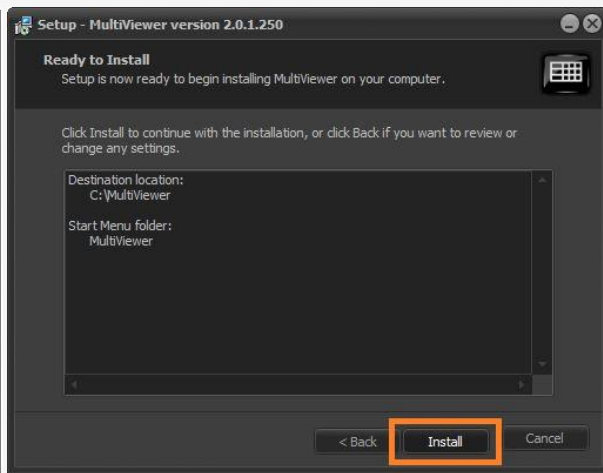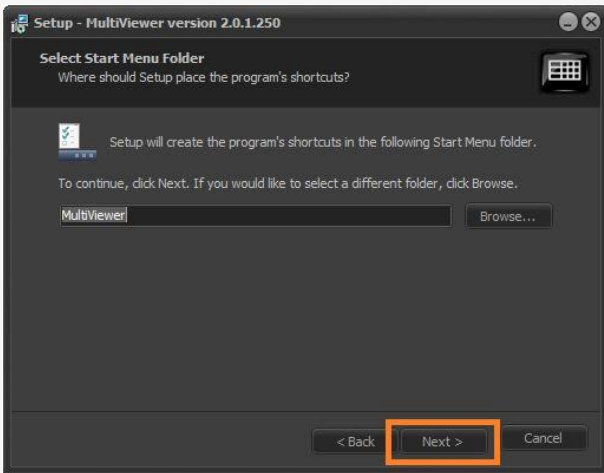
4. Installation

Run Setup "MultiViewer" and follow instruction on the screen to complete the installation.
All application files and corresponding libraries will be created in the directory "C:\MultiViewer". Extra folders will be created called "Alert_Sounds" and "Backgrounds" where you can find an example files used in the program.
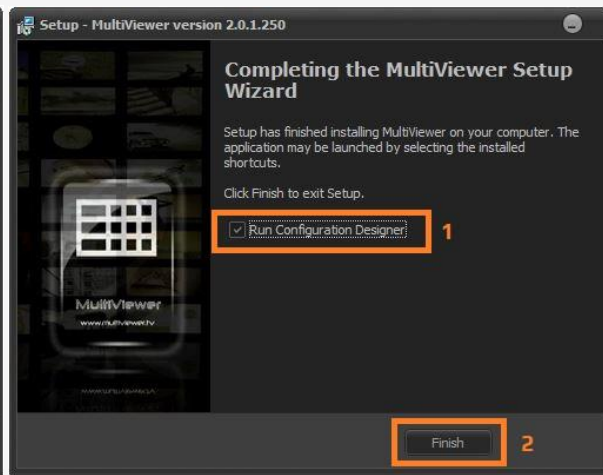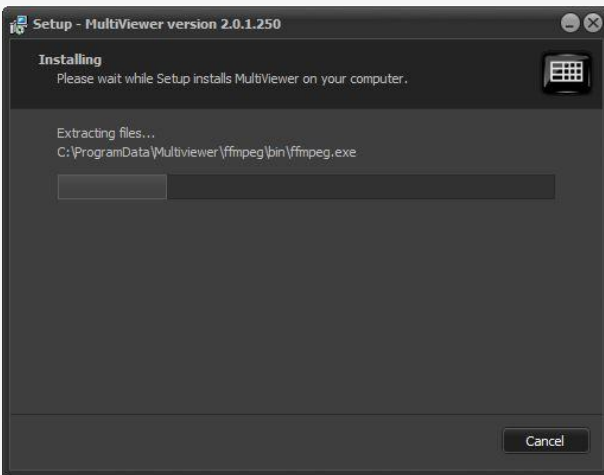

🖎 Please **NOTE**:

During the setup you may change installation folder path, but make sure that path doesn't contain blank spaces and you have Administrators rights to overwrite files in that directory - as MultiViewer may not work correctly.

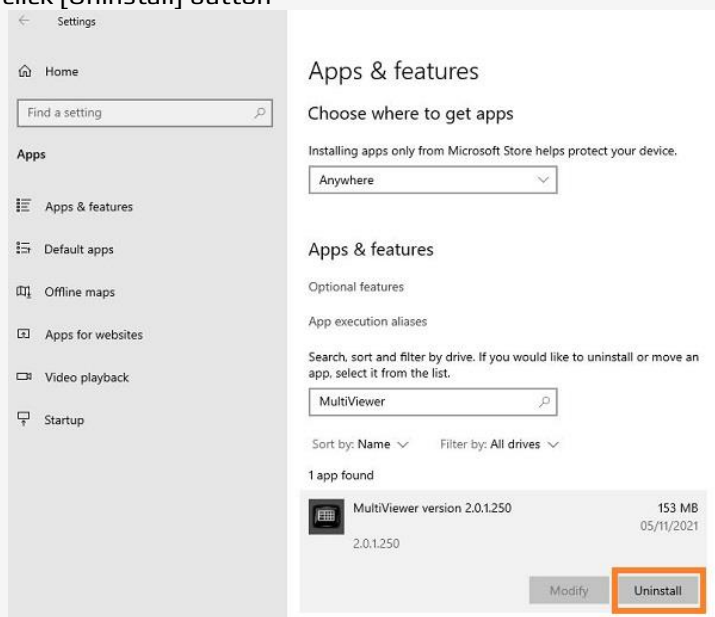Click [Install] button and wait for file to be copied

Select check box to launch Configuration Designer and press [Finish] to finalise installation.

4.1 Uninstalling/Removing MultiViewer from system

To uninstall or remove Multiviewer from your system follow few simple steps:
Go to your System Settings > Apps (or search for Add and Remove Programs) > Search for Multiviewer and click [Uninstall] button
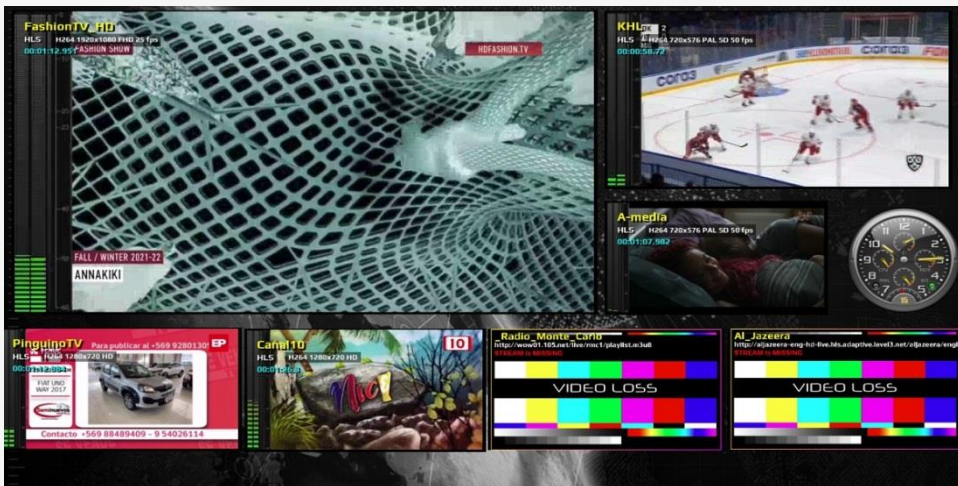
5. Usage guide

The running application with all 20 players' layout appears as below:

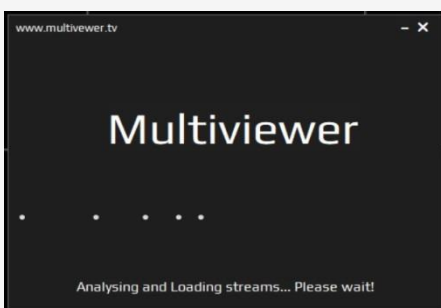Alternatively, custom design of 7 players may look as follow:

5.1 Launching the application

Double click on **mv.exe** file or on the Desktop Shortcut to execute the program.
The application will check for Internet connection and in the case of success will show the dialog as below:

It will analyse incoming streams and load them per chosen layout. In case of missing file, that contain layout information, you will be prompted to launch MultiViewer Designer.
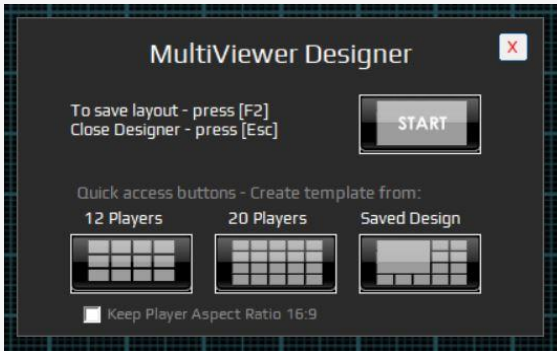
✎ Please **NOTE**:

To monitor local streams in the closed LAN - without Internet connection – please send your request for the different version of the MultiViewer via main website.

5.2 Configuring MultiViewer.

5.2.1 Launching the configuration first time

If the application executed first time you will be asked to configure MultiViewer and automatically runs MultiViewer Designer.

You may manually launch **mv_designer.exe** file to create layout – modal dialog window will appear as below:

Choose [START] to create new layout from scratch or use quick buttons to generate the grid of 12 or 20 players. [Saved Design] button allow you to load previously saved project used in MultiViewer.
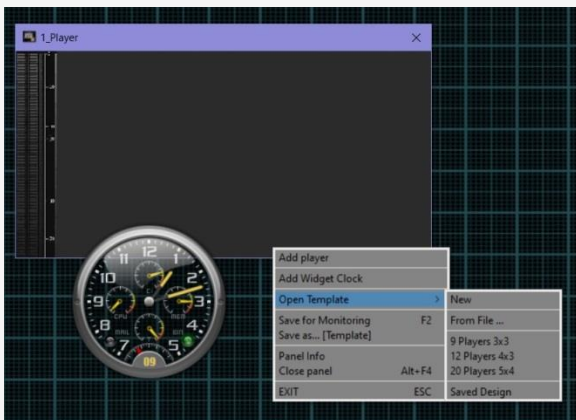
Select checkbox to keep the player size during resizing with aspect ratio 16:9 – leave it unticked to resize freely.

5.2.2 MultiViewer Designer

New layout comes with one player panel.

"1_Player" as part of the GUI cannot be closed as you need at least one player to launch MultiViewer. Any other panels can be closed or added with the right-mouse click.
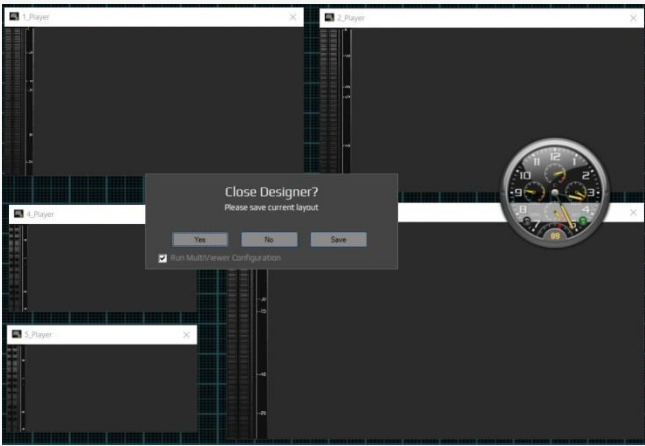
You may resize and move the panels as normal windows and rearrange them per your requirements.
The Right-Mouse Click will provide the menu with options as screenshot below:

The Options:
- Add player – add an extra player panel
- Add System Widget Clock
- Open Template
  -New – starts with one player
  -From File ... - loads saved template from file
  -9 Players 3x3 – opens grid of 3x3 panels
  -12 Players 4x3 - opens grid of 4x3 panels
  -20 Players 5x4 - opens grid of 5x4 panels
  -Saved Design – current saved design used by MultiViewer
- Save Design [F2] – save current layout which will be used in MultiViewer
- Save as... - creates a backup copy of the current layout as external file
- Panel Info – information about highlighted player – position and size
- Close panel (notice – "1_Player" window cannot be closed)
- Exit [ESC] – close the program

Once the template created - save your work by pressing [F2] or from right-mouse button menu and press [ESC] button to quit Designer.
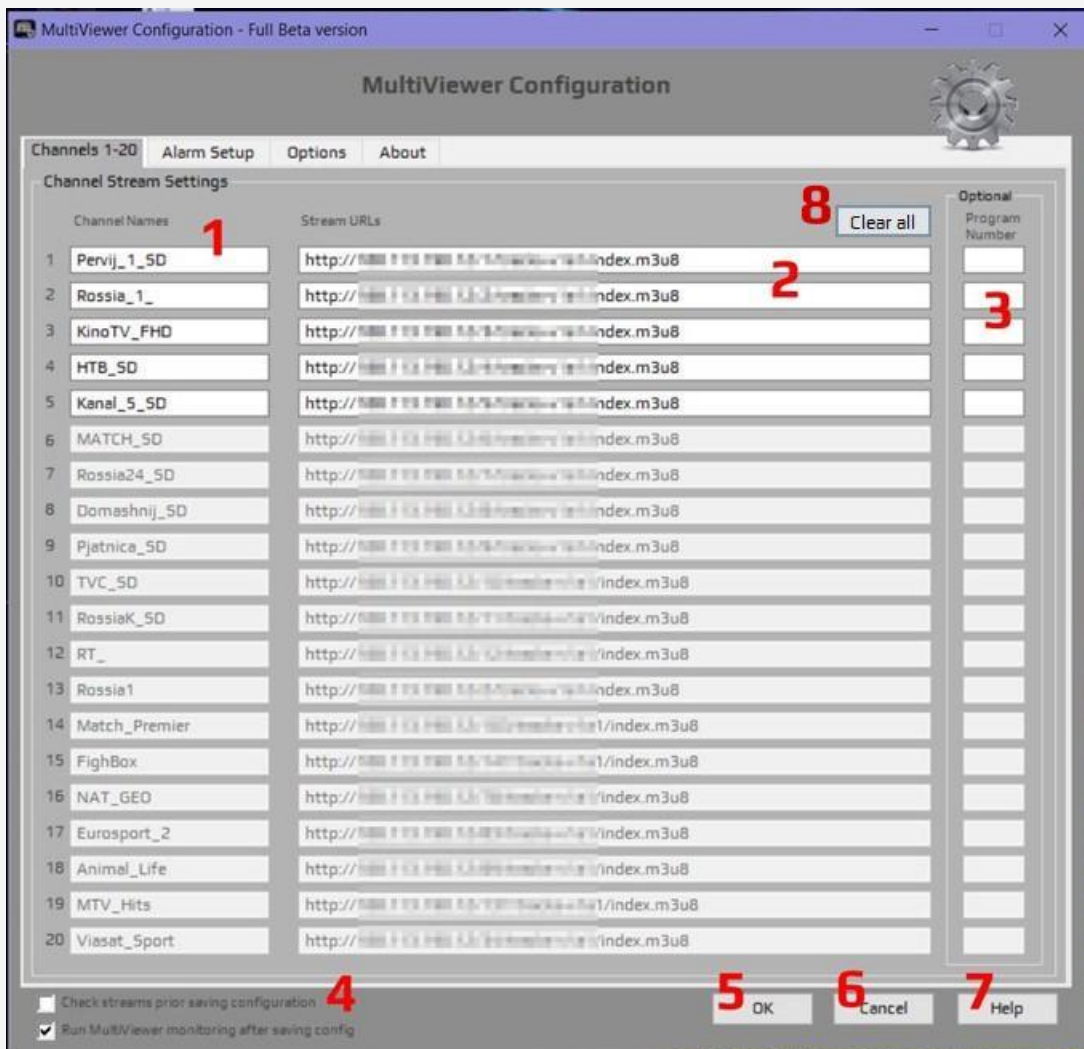
If the checkbox "Run MultiViewer Configuration" enabled/ticked, while closing Designer – the program will execute stream configuration program automatically. To quit Designer without launching MultiViewer configuration – untick the box.
[No] button will return to Designer.
[Save] will prompt to save layout.

5.2.3 Channel Stream Settings

Launch Stream Configuration program called **mv_config.exe**
Please wait until the application finished loading data from current setup. The quantity of the streams depends on the saved layout – rest of the streams will be greyed out and will be ignored during monitoring. MultiViewer Configuration GUI looks as picture below:

There are 4 tabs and first tab is for setting up channel names and corresponding stream URLs or file paths up to 20 source Inputs.

1 Channel names - should be unique and should contain letters and numbers. Back spaces will be replaced with underscore symbol - once configuration file saved.

2 Stream URLs or file paths.

3 Optional Program number - could be set for Multi Program Transport Stream (MPTS) to choose right Single Program Transport Stream (SPTS) from incoming mux.

4 Check all streams before saving configuration by enabling checkbox.

5 Press OK button to save your settings.

6 Press Cancel to quit settings window without saving it.

7 Press Help to get this user guide manual.

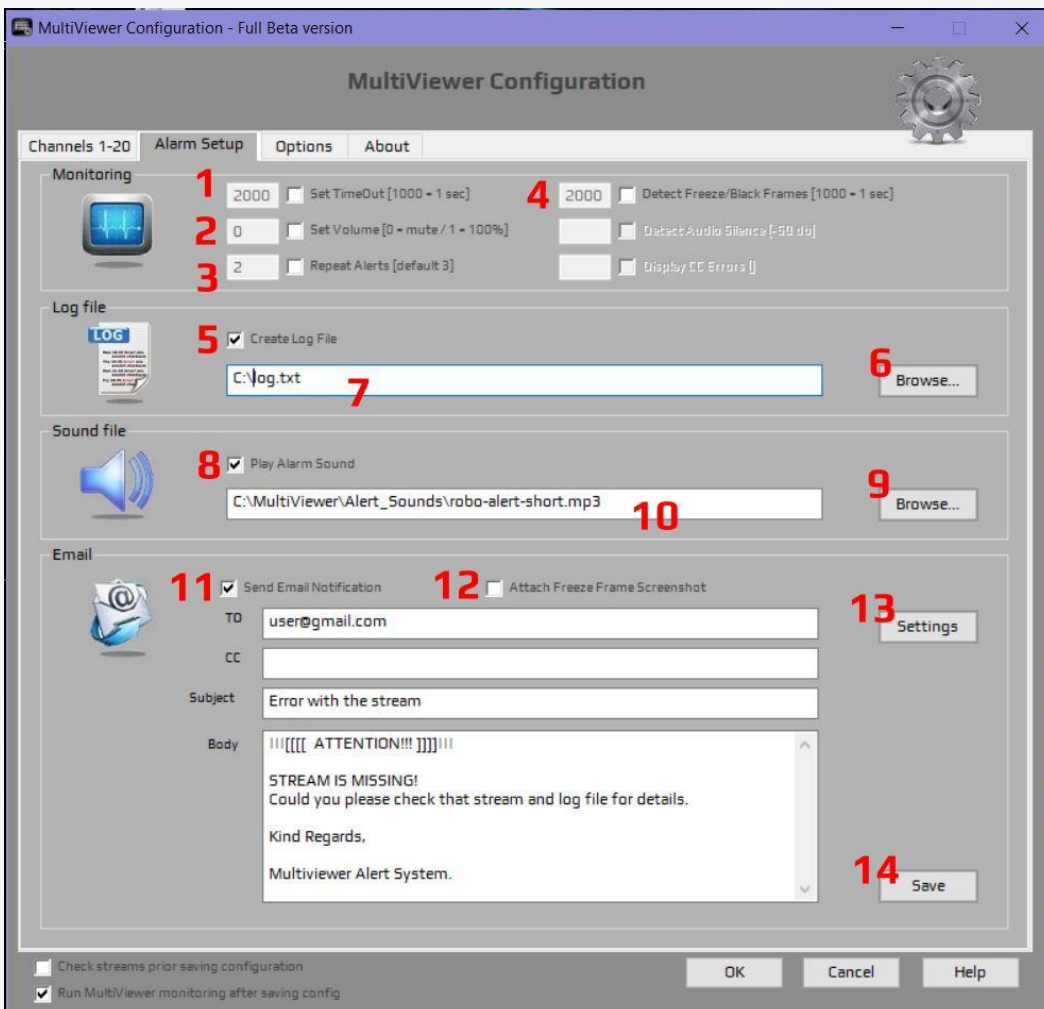**8** Clear all fields at once – including none active sources.

✎ Please **NOTE**:

Depends on the chosen layout some of the fields could be greyed out. Access to all 20 links is available in the 20 media players' layout only.

5.2.4 Alarm Setup

The second tab allows you to configure alarms and monitoring options include email notification, sound alert and log creation. Email notification requires setup described in paragraph 4.2.5

Please see the screenshot below:

1 Set TimeOut between the monitoring checks.

2 Set Volume between **0** and **1**. Zero will mute the audio to all players. If the value is **0.5** - all players will play sound simultaneously in half volume.

3 Repeat Alerts – number of alerts you receive including sound alarms, colour bar slate resized to penalty window and email notification? It doesn't affect the log file. If you choose to create the log file it will continue to log missing streams.

4 Set threshold for black/freeze frame detection
5 Tick the box to enable log
6 Browse to folder and choose the log file
7 The log file path, if empty – file will not be created.
8 Tick the box to enable the sound alert
9 Browse to folder and choose the sound file – few examples in the installation folder called *Alert_Sounds*
10 The file path, if empty – file will not be played.
11 Tick the box to enable the email alert
12 Tick the box to enable the file attach – screenshots of the freeze frame will be sent out with an email
13 Settings for email configuration. Please see paragraph 5.2.5
14 Save email template fields (TO, CC, Subject, Body)

5.2.5 Email settings

The Settings button will prompt pop-up window as below:

1 Set SMTP server – for Gmail account you may use *smtp.gmail.com*
2 Set Port number – for Gmail account default is 465
3 Use tick box to enable/disable SSL – for Gmail account – enable SSL
4 Type your user name
5 Type your password
6 Press button to save your settings
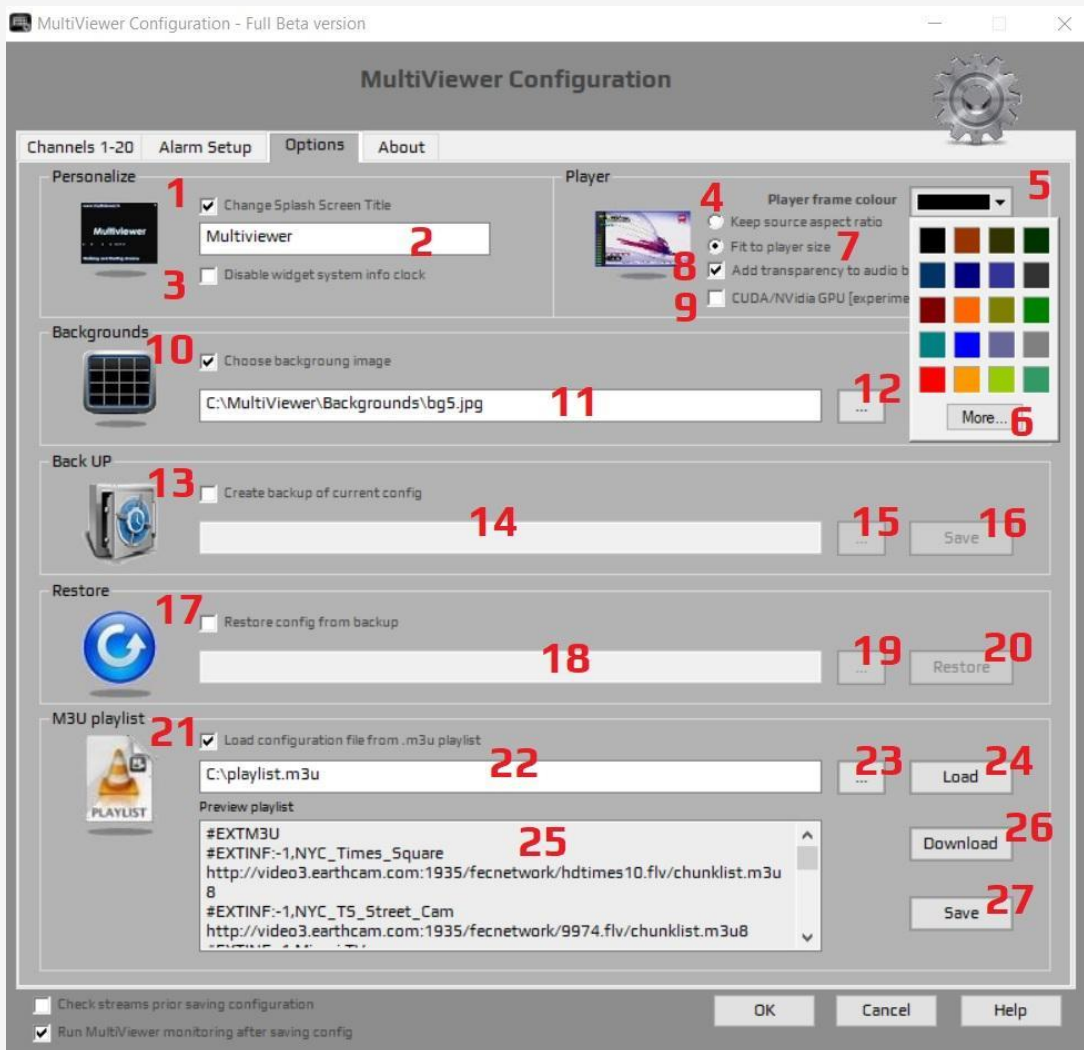**7** Press Cancel to quit settings window without saving it.

✎ Please **NOTE**:

If you enable email alert and did not configure it - you may see an error message as below:

5.2.6 Choosing the options

Select Option tab to personalised spash screen, switch off system clock widget, select frame colour of the media player, save current configuration in INI file or restore from backup. In addition, offload CPU playback to GPU, make audio VU meter transparent, load and convert M3U playlist as new configuration for the instant setup.

Following screenshot explained:

1 Checkbox allow to select/change loading splash screen title.
2 Type your Company name or monitor ID - the application will use it during strart up.
3 Tick the box to disable widget clock
4 Keep current source aspect ratio
5 Select player frame colour
6 More colour options
7 Fit incoming stream source to player size
8 Tick the box to add transparency to audio VU meter
9 Enable NVidia GPU/CUDA hardware acceleration by ticking this checkbox [more info]
10 Checkbox allow to change backgroung image
11 File path for the background image
12 Browse for the backgroung image. There are example files in the "Backgrounds" folder.
13 Checkbox allow to create a backup of the current configuration
14 File path – the program automatically puts the date and time stamp in the file name
15 Browse for the backup folder
16 Save current config as a backup file
17 Checkbox allow to restore saved configurations
18 The file path to the backup configuration file
19 Browse for saved config file
20 Press [Restore] button to load stored configuration
21 Checkbox allow to load/create your own playlist from M3U file
22 Playlist file path
23 Browse for .m3u playlist file
24 Load the M3U playlist to MultiViewer for quick setup (only first 20 channels/sources will be included).
25 Preview and Edit window for the current playlist file
26 Download an example test playlist from Internet (if available)
27 Save any modification of M3U file in the 'Preview playlist' window (25)
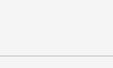
5.2.7 Hardware acceleration with NVidia GPU VGA

HW acceleration will release CPU load and offload playback to compatible GPU VGA card. Supported cards are NVIDIA GeForce, Quadro, Tesla, and GRID products with Fermi, Kepler, Maxwell and Pascal generation GPUs. Please refer to GPU support matrix and check if your card is in that list.

5.2.8 System Clock Widget

Widget clock is not resizable, but has plenty options to choose from. It will monitor CPU and memory load, system drive capacity and network activity. It can be used as an alarm clock.

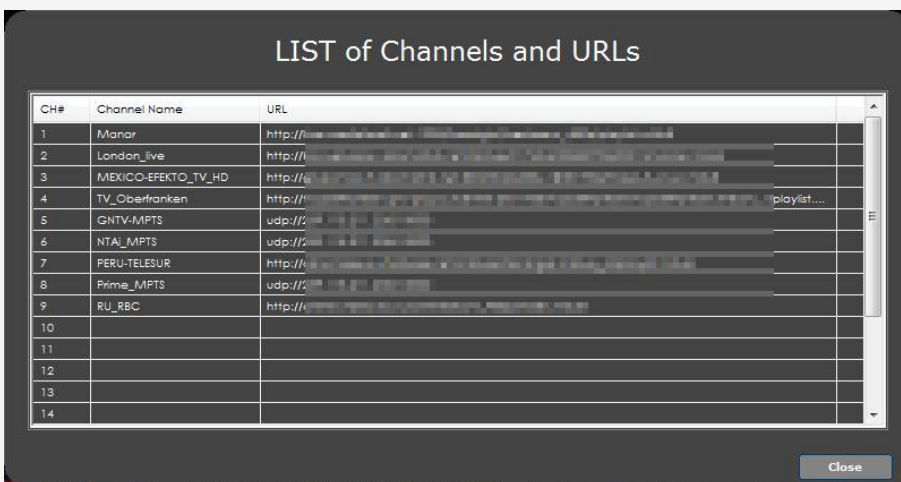|		
1	**CPU load**	Keep CPU load below 80% to avoid jerky playback
2	**System Drive Capacity**	System drive capacity info
3	**Memory load**	Memory status information
4	**Current Time**	Current time of System clock
5	**Current Date**	Current date
6	**Alarm indicator**	Alarm indicator is lit on when alarm is triggered
7	**Network Activity**	Network activity indicator
8	**Seconds dial**	Subsidiary Seconds Dial at 6 o'clock.
9	**Option menu button**	Right-Mouse Click on this area to open options menu. There are options for setting up Alarm Clock, Colour choice etc...

5.3 Discovering the missing stream.

When the application will discover missing stream, it will replace that player with colour bars slate and zoom to penalty window for few seconds (see picture below) and as an option: will create log, play alarm sound and send notify email.

5.4 Getting the streams details.

Press **F1** button - to display the list of the Channels and corresponding URLs that has being configured in current configuration

5.5 Closing the application.

Press **ESC** button - to close the application and wait until the dialog as below disappears:

6. Known Issues

- System must be dedicated for monitoring and cannot be used for other Windows tasks during application run. Once MultiViewer is running – player windows activated and controlled automatically during the checks.

7. Proposals for future implementations and expansion

- Ability to detect audio loss/silence
- Display CC errors during playback
- Change position of VU meter via Designer