Setting up the MultiScreen output - control monitor for server inputs/outputs

The SL NEO server in any series can be equipped with optional SD/HD SDI and/or HDMI outputs to display all input and output signals on the SDI/HDMI monitor screen in MultiScreen mode.

This feature is optional and is not part of the basic features of the SL NEO server, primarily due to the need for an additional HD SDI/HDMI output board and the need for increased server CPU performance.

Nevertheless, without additional activation, it is possible to configure this feature on the SL NEO server using the “free” HD SDI/HDMI output with the available CPU performance reserve.

The free CPU resource and “free” IP output will also allow the MultiScreen - composition to be encoded into the standard UDP/RTP IP transport stream for on-line monitoring of input/output signals by network users.

It should be noted that the MultiScreen output displays the stream not directly from the physical server outputs, but from the output of the corresponding software module, which is located logically “before” the board/output interface. This cannot be considered a completely correct approach to the monitoring issue.

To address this issue, SkyLark Technology has developed a separate line of monitoring products - SL NEO 8000 series processors, which are standalone devices and work with SPTS/MPTS over ASI/IP and HD/SD SDI input signals.

A software server module, MultiScreen, is used to form a multiscreen composition.

The module supports indication of audio levels, alarm signaling of freeze frames, black field, control of excess/underscale of audio level in relation to the set values. Information about all emergency situations is reflected in the log files. It is possible to display several fields with clock and current date in a separate window (server system time is displayed). The MultiScreen composition configuration tool contains a web editor, which allows you to set the position, size of each window, and the name of the channel.

The MultiScreen module is integrated with the recording and automated broadcasting systems of the SL NEO platform - additional text information from Program Channel (the playlist playback control module) and Record (the recording control server module) services is configured in the windows.

How to configure the module that generates a multiscreen song

Step 1. Add a new component - MultiScreen module to the server configuration

Right click on the blue SL NEO icon in the taskbar, select Stop Server and stop the server components. After a while the icon will change color to red. Then right click on it and select Configure Server Components. In the settings window, from the Available components field add to the right field MultiScreen element.

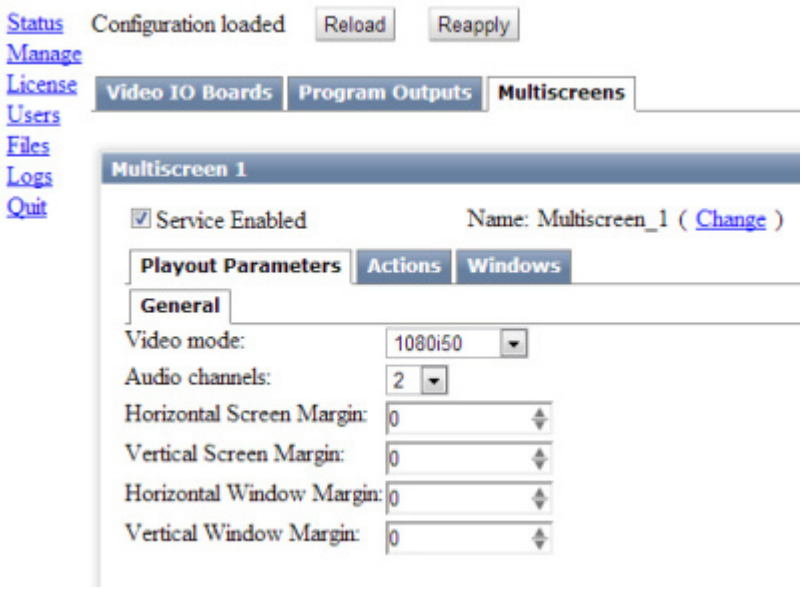
The MultiScreen module functions together with the input-output devices, so make sure that the corresponding elements of the server software are present in the system.

Step 2. Launch the SL NEO server software and configure the parameters of the MultiScreen module and the composition

After starting the server software further settings will be performed from the Administrator Control Panel. Logging into the management console is done locally from the server, or from any machine in the network at the address `http://ip server:7901`. You should log in to the management console as an administrator.

The Multiscreens tab in the Manage section allows you to configure the parameters of one or more Multiscreen server modules, each of which provides the formation of a single multiwindow composition.

Basic composition parameters



Activate the Service Enabled item and enter the service parameters - in the Playout Parameters/General tab, in the Video Mode field, select the mode (resolution and frame rate) for the

output stream. To avoid additional load on the processor, it is desirable that this option corresponds to the one set in the output board settings (Playout service).

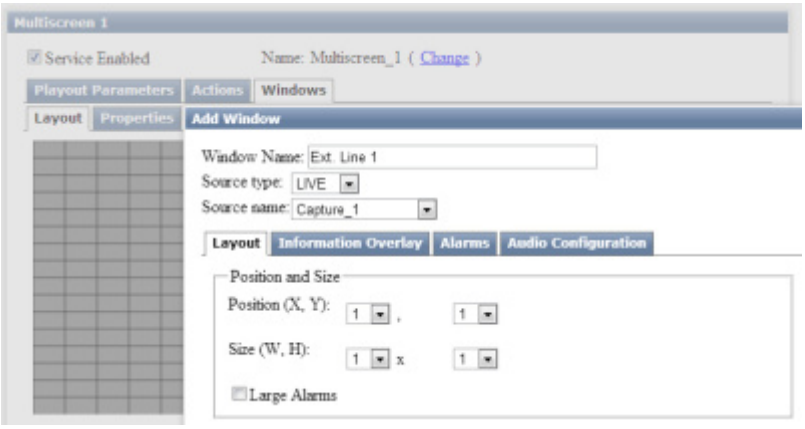
In the Audio channels field specify the number of audio channels to be formed in the output signal. The Report folder field specifies the path to the folder where the log files will be generated.

The 4 parameters Margins specify the size of the margins of the composition and the borders (“gaps”) between the windows in pixels.

Creating a new window

Go to the Windows tab - here, you set the number of the windows you want to form and the parameters for each of them. The Layout tab contains the composition editor with a 16×16 grid. The New button creates a new window - a composition element. In the Edit Window dialog box with the new element settings, in the Window Name field you must specify the name - this text will be displayed as an inscription at the top/bottom of the displayed window.

Selecting a signal source for the window



Select the audio/video stream source for this window. Specify the source type in the Source type field. The selection options (types of sources):

- **LIVE** - “streaming” source. The “stream” means the “internal” uncompressed stream from the output of one of the SL NEO platform software modules. To display the signal coming to the server input, select the appropriate capture service Capture or Record from the drop-down list in the Source name field. To display the signal of the output program channel, select Program Channel or Playout.
- **FILE** - pre-loaded file, selected from the list in the Source name field. The procedure of downloading files to the server/processor SL NEO is performed directly from the web-console. In the console menu, select Files, then select Upload File and select the file itself. The upload procedure implies simple copying of the media files without any conversions. After the file is uploaded, it appears in the list on the Files page of the control panel. This technology allows you to upload a file from a remote machine to the server using a web browser.
- **URL** - a clip from the SL NEO server database or a file from the local/network folder. To specify a name of a clip located in the database, specify in the Source name field: `medb://ip_server/title:clip_name`, where `clip_name` is the name of a clip in the database (Media field). To specify a name of a file located in a local or network folder, specify

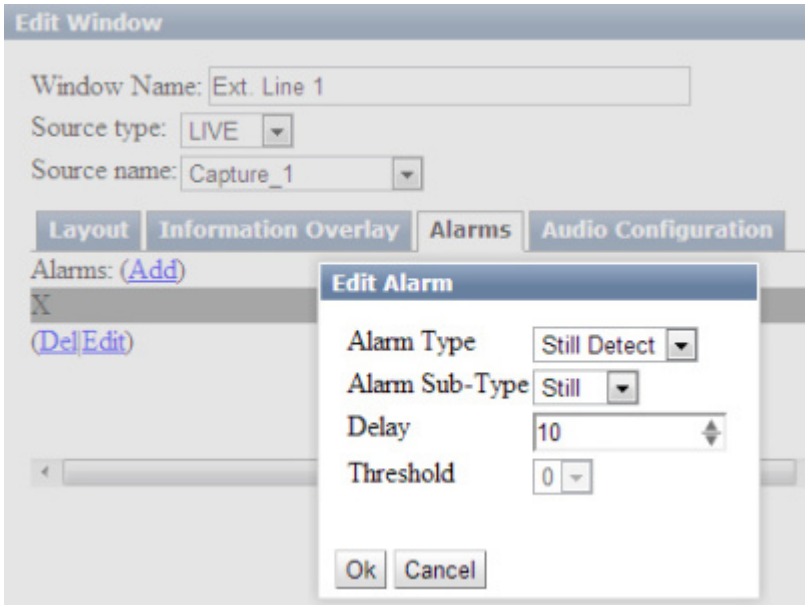
path to the file in the Source name field: `disk://folder_name/clip_name` or `//host_name/folder_name/clip_name`. The specified clip will play in the window in “infinite” loop mode. Selecting the file source is relevant for displaying the date and 'digital' clock contained in the graphic composition file.
- **NONE** - the audio-video stream source is not set for this window. If NONE is set, it is possible to create a new window displaying only the text.

Window positioning

The Layout tab is used to specify the size and positioning of the window. In the fields Position (X, Y) and Size (W, H), set the initial size and position of the window. One element of the editor grid (16×16) is taken as a unit. It is not necessary to set the exact parameters of the window at this stage - they can be corrected directly in the visual editor of the composition.

The Lage Alarms parameter is responsible for the type of text caption displayed in the window when an alarm is triggered: when the Lage Alarms parameter is on, the full phrase is displayed (for example - Video Frozen), when the parameter is off, only the abbreviation is displayed (for example - VFR).

Setting up textual alarms in the window



The Alarms tab is used to set up textual alarms in the window. The conditions for triggering of alarms:

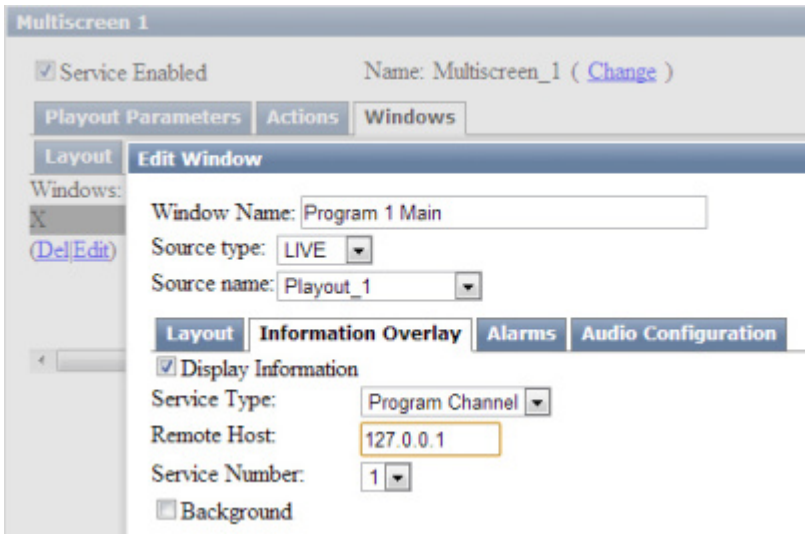
- **Still Detect** - detection of a freeze frame or a “black” field,
- **Audio Level** - exceeding or undershooting the set dBFS audio level.

In the Alarms tab, the Add button adds a new condition. In the Alarm Type field selects the type of detection, in the Alarm Sub-Type field selects the addition to the condition. The Delay field is used to set the triggering delay in seconds. In the Alarms tab, you can configure the simultaneous execution of several conditions.

The text alarm functions when selecting sources for the window with the Capture and Playout types and does not work from “internal” sources with the Program Channel type.

Displaying current information from play/rec sheets

The Information Overlay tab is used to set up the displaying of the text information coming from the Program Channel (playlist execution control module) and Recorder (recording control module) services.



In the Service Type field you select the service type, in the Remote Host field you specify the IP address of the server where the corresponding program module is running or you specify 127.0.0.1 with the localhost value. The Background parameter adds a semi-transparent background to the displayed text.

When Program Channel is selected in the Service Type field, the composition window will display:

- **C:** - current - name of the current executable event in the playlist (Media field), time elapsed from the event start and time remaining to the end of the event (Remaining);
- **N:** - next - name of the next event in the playlist.

Audio Configuration

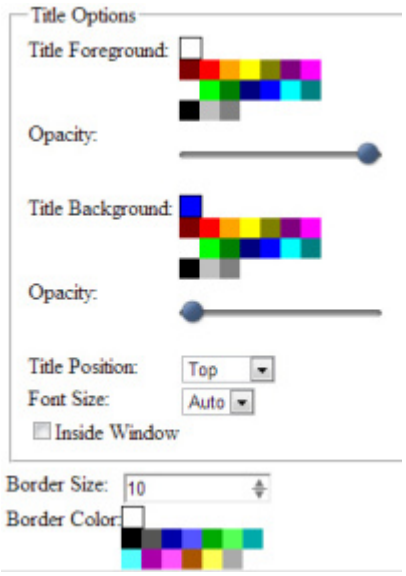
The Audio Configuration tab is used for configuring the number of the channels displayed in the audio level indicator in the window.

Select the number of audio channels to be displayed in the Audio Channels field, select Add in the Audio Layout field, and in the dialog box that opens, assign the channels for switching to the Multiscreen service outputs.

Setting the indicator parameters is performed in the main editing window in the Audio Bar Options field:

Parameter	Description
Audio Bars	activates the display of the indicator;
Base Audio Level	sets the static offset of the level readings in dB and you can use it to adjust the indicator to the desired type of scale (taking into account that the highest reading of the indicator = 0 dBFS);
Audio Position	Options for the position of the indicator (left/right);

Parameter	Description
Audio Bar Width	Bar Width
Display Numbers	Display Level Numbers on/off;
Font Size	Size of font for numbers.



The Title Options field in the main editing window, allows you to set parameters for the text displayed as the window title:

Parameter	Description
Title Foreground	text color, Opacity - text transparency;
Title Background	The color of the text background, Opacity - transparency;
Title Position	position of the text (at the top/bottom of the window);
Font Size	Font Size;
Inside Window	setting to allow the text to be placed directly on the image;
Border Size	Window Size, Border Color - the color of the border.

Creation of a window with the clock and the current date

To create a clip with the clock you should use the graphic editor of the Air Manager client application. The Air Manager user manual contains detailed instructions for creating such compositions.

Create a graphic composition with the clock without using the database service. The file with the composition (extension *.slg) should be saved in the folder “C:\Program Files (x86)\SL NEO Media Platform\run\files” on the server.

The next step is to create a new window in the multi-window composition and select for it the file source FILE - from the list in the Source name or URL field - a clip from the SL NEO server database or a file from the local/network folder. To specify the name of the clip located in the database, specify in the Source name field: `medb://ip_server/title:clip_name`, where `clip_name` is the name of the clip in the database (the Media field). To specify a name of a file located in a local or network folder, specify path to the file in the Source name field: `disk:/folder_name/clip_name` or `//host_name/folder_name/clip_name`. The specified clip will play in the window in “infinite” loop mode.

Creating a window with text

A window containing only text is created by the Text Items button in the Layout tab. In the dialog box Add Window with the settings for the new item, in the Text field specify the text to be displayed, specify the font size, color and transparency of the text and background.

In the fields Position (X, Y) and Size (W, H) set the original size of the window and its position. One element of the editor's grid (16×16) is taken as a unit. You don't need to set the exact parameters of the window at this stage - you can adjust them directly in the visual editor of the composition.

Copying composition windows

At this point, window editing is complete. As a rule, most of the composition windows contain identical parameters. To copy the windows, you need to use the Copy/Paste buttons in the Windows Layout tab. You can set the size of each window by pulling the white marker at the bottom right of the window.

In the Windows - Properties tab, all the formed composition windows will be displayed as a list; the Edit button in the list calls the menu for editing the parameters of the corresponding window.

Saving the created composition to a file

To save the configured multi-window composition, use the Save Config button located in the Multiscreen window. The physical location of the saved file is the folder “C:\Program Files (x86)\SL NEO Media Platform\run\files” on the SL NEO server. The function allows you to save/load configuration xml-file from remote machine to the server using web-browser, without using shared-resources.

This completes the configuration of the Multiscreen module, click Apply Changes at the top of the web console window to apply the current settings. The Multiscreen service, which was configured with the changes, will be restarted and the song playback will be paused at the moment of restart.

Step 3: Generating the output signal - switching the MultiScreen signal to the SDI/HDMI output

In the left main menu of the web-console select the Status tab. On the page there are windows, according to the configured hardware and software components of the SL NEO server. At this stage

you should perform the switching of the streams between the basic software modules and make the final settings.

The Status page contains the Playout modules. They are responsible for the playout channels through the I/O boards. The input of the corresponding Playout module will need to be fed from the Multiscreen module. Select Input in the Playout module icon, then specify the LIVE source type - “streaming” source - in the Source type field in the new Set Input window. To display a multiscreen song, select the corresponding Multiscreen service from the drop-down list in the Source name field.

When switching is successful, the icon in the Playout window will display the signal coming from the Multiscreen service, and the corresponding signal will appear on the SDI/HDMI output.

Switching audio signals to Multiscreen output

Select the Action parameter in the Status tab in the corresponding Multiscreen window. Select the Set Active Window action in the Execute Action window. In the Param 1 field specify the name of the window, which sound info is to be broadcasted to the output. The Next Window action makes the next window active, and the audio streams from this window will be directed to the Multiscreen service output.

Using the GPI/Hot Keys service, you can configure switching of audio sources using the keys on the keyboard of one or more PCs.