NovoDS

Ultra-High Definition Digital Signage Player

User's Manual

DS200 Series

Version 2.1

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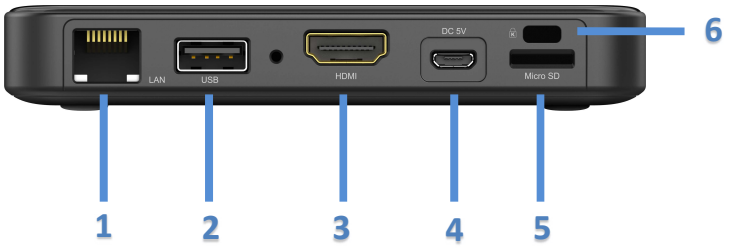
1. Getting Started

1.1 Key Features

NovoDS is an easy-to-manage digital signage solution for creating dynamic multimedia content for a variety of large-scale corporate and educational applications. Designed with a user-friendly interface, the NovoDS allows users to generate signage content without the need of any programming skills. Its features include

- Support 4K display resolution;
- Built-in WiFi and built-in internal storage
- Intuitive playlist creation;
- Scheduled playback;
- Network-based management;
- Remote monitoring

1.2 Hardware setup



	Component	Function
1	RJ45 Port	Ethernet connection
2	USB Port	USB mouse/keyboard and USB thumb drive
3	HDMI Port	Display output
4	DC 5V Power Jack	Power input
5	microSD Card Slot	microSD card for additional storage
6	Kensington® Security Slot	Secure lock

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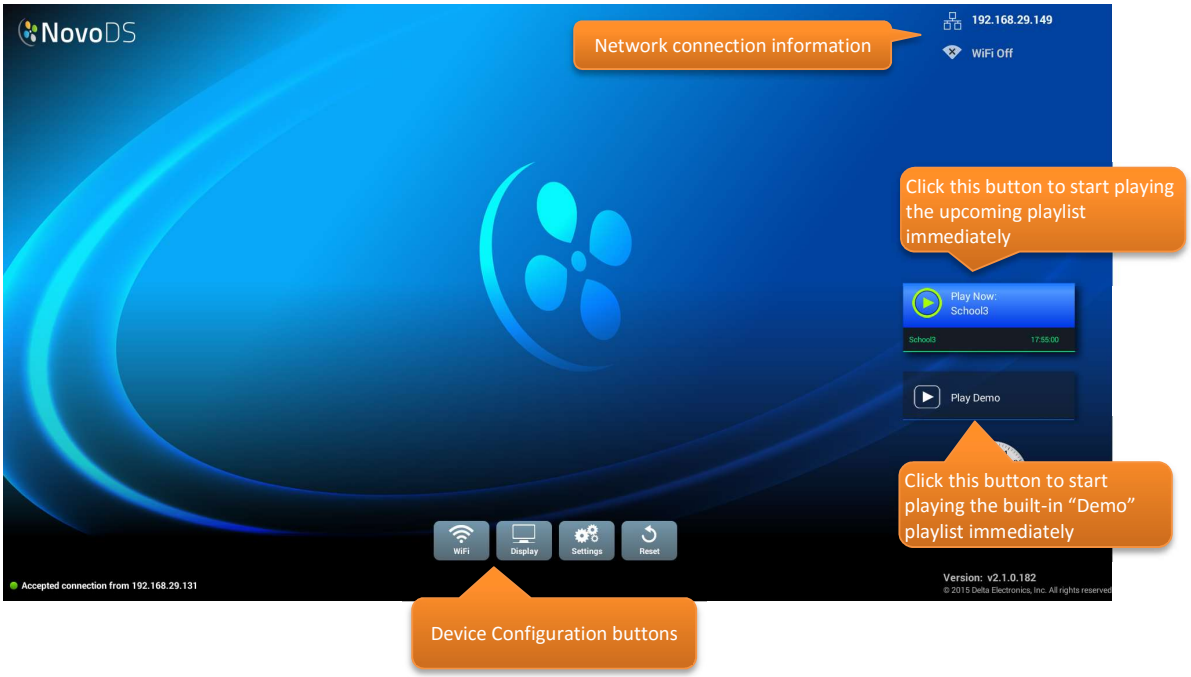
1.3 Configuring the NovoDS

There are several buttons available at NovoDS' home-screen for device configuration, such as display resolution, WiFi settings, etc. The following figure illustrates the key functionalities and Information shown on the home-screen after power-up.



1.3.1 Display Options

Button "Display" allows you to select the proper display resolution through tab "**Resolution**", and to resize the display output dimension through tab "**Scaling**". It is worth mentioning that unsupported display resolutions will become inactive. For example, if you connect a non-4K monitor to NovoDS, the "4K" resolution will be greyed out, as shown in the figure below. "**HDMI-CEC**" tab allows you to enable/disable HDMI-CEC feature. Once it is enabled, you can use TV remote control to control NovoDS device as well.

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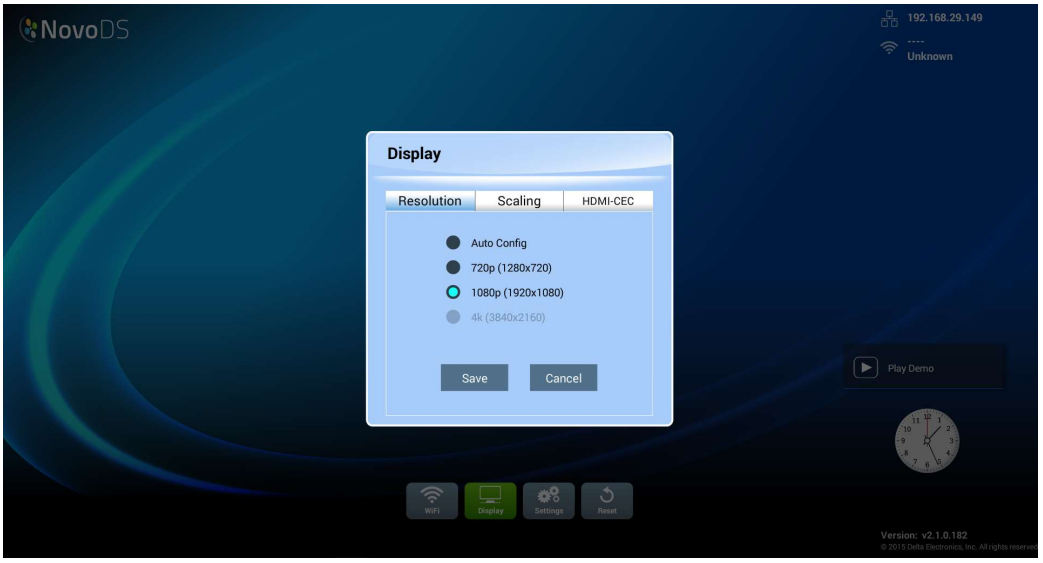


1.3.2 Settings

There are several actions you can take under button "**Settings**".

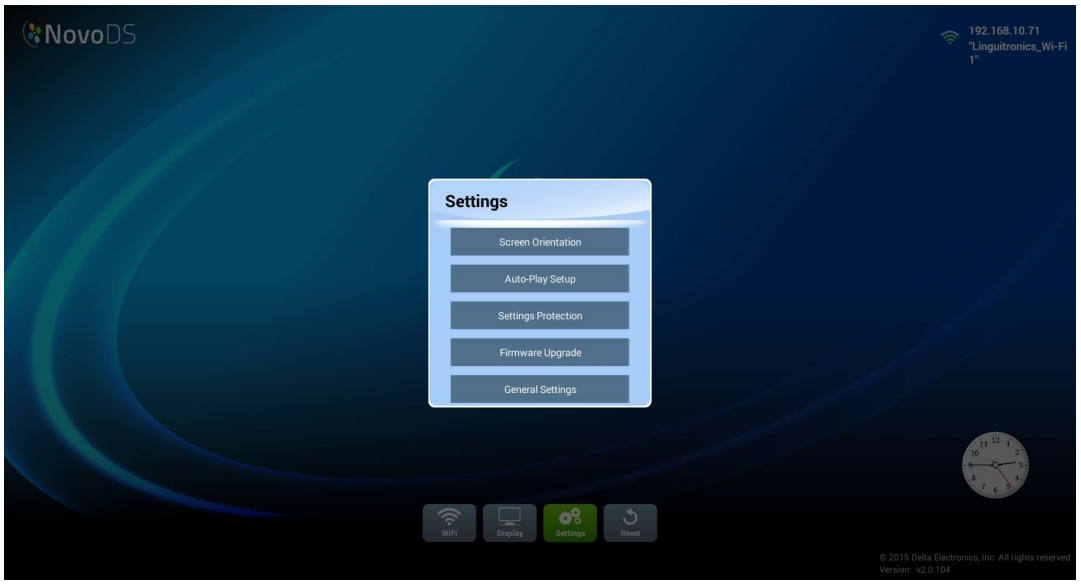
(1) "**Screen Orientation**" – Configure the display output in "Landscape" or "Portrait" mode

(2) "**Auto-Play Setup**" – Configure auto-playback after device's boot-up and upon microSD card insertion.

(3) "**Settings Protection**" – Lock or unlock device settings with a password.

(4) "**Firmware Upgrade**" – Check for firmware upgrade from our Internet server.

(5) "**General Settings**" – Set regional language, date & time, etc.



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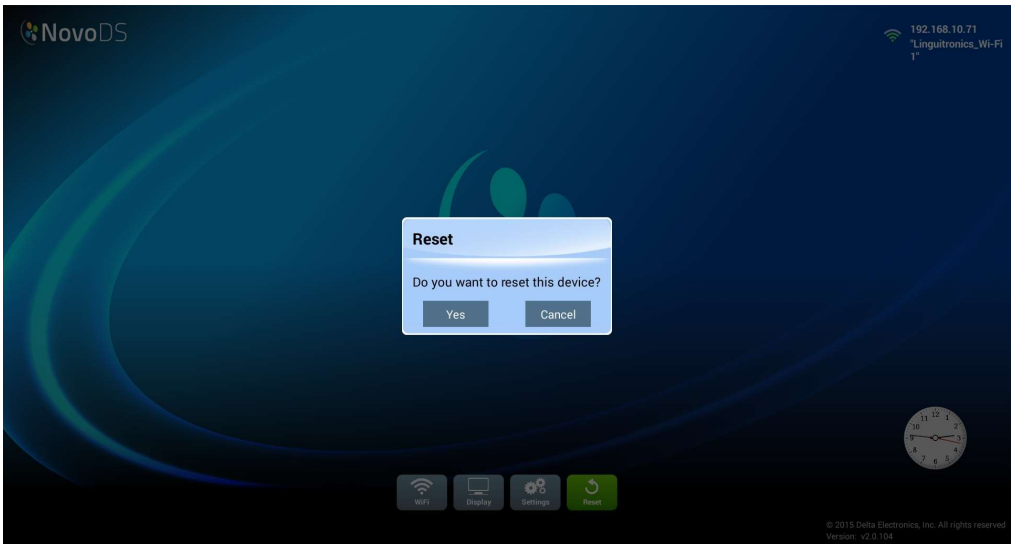
1.3.3 Reset

Click on button "**Reset**" to restart the NovoDS device.



1.4 Modes of Operation

Users can manage content via two ways,

(1) **Stand-Alone mode** (by using a microSD card)

(2) **Network mode** (via the network)

1.4.1 Stand-Alone Mode

Stand-alone mode is simple plug-and-play operation and requires no direct management of the NovoDS device, which is suitable for single-device deployment.

To run NovoDS in Stand-Alone mode:

a. Create the desired playlist on your computer using the NovoDS software (*See section 3.1*).

b. Save and export the playlist to a microSD card (*See section*

c. *3.5 Exporting a* Playlist).

d. Launch the NovoDS device.

e. Optionally, disable WiFi function through button "WiFi" at NovoDS' home-screen.

f. Insert the microSD card into the NovoDS device. Then, the device will start playback automatically.

1.4.2 Network Mode

Network mode allows users to synchronize playlists to multiple devices from a computer via WiFi or Ethernet connection.

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To run NovoDS in Network mode:

a. Power on your NovoDS devices.

b. You have a choice of using Ethernet or WiFi.

- To use Ethernet, simply plug in an Ethernet cable.
- To use WiFi connection, the configuration will take a few more steps, described as follows.

i. Click on button "**WiFi**" in NovoDS' home-screen

ii. Select "**Connect to Wi-Fi**" and then click on button "Configure". This will bring you to a WiFi configuration page, where you can select the desired WiFi network. You may require to enter network credentials when necessary.

iii. Once this is completed successfully, the network SSID and IP address will be displayed in the top-right corner of the screen.

c. Connect your PC to the same network (Ethernet or WiFi) as the one used by your NovoDS devices.

d. From this point onwards, you can use NovoDS software on your computer to manage your NovoDS devices.

WiFi Hotspot

NovoDS can function as a WiFi hotspot which can be convenient for small-scale deployment or product evaluation. To connect via Hotspot Mode:

a. In the WiFi configuration screen, select "**Enable Wi-Fi Hotspot**" and then click on button "Apply"

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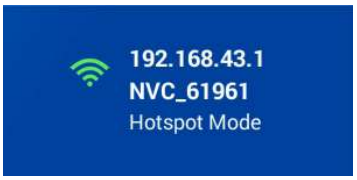
b. An IP address and its SSID will be displayed for the NovoDS device in the top-right corner. (In the figure below, the IP address is 192.168.43.1 and the SSID is "NVC_61961.")

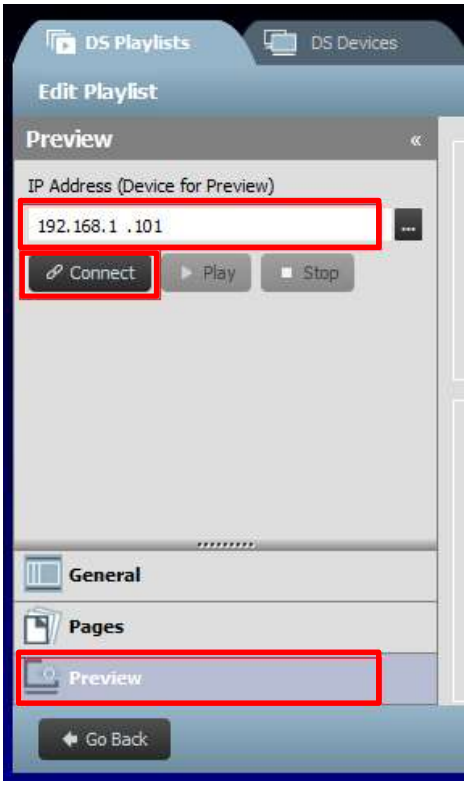


c. Now you can connect your computer to this WiFi Hotspot and start managing this NovoDS device.

To test the connection

We can use "Preview" feature to test the network connection.

a. Open NovoDS software and select a playlist
b. Click on "Preview" tab on the left pane, and then, enter the corresponding IP address of the NovoDS device.
c. Click on button "Connect" to connect to the device. If the network configuration is done properly, the connection will be established successfully.



IMPORTANT: To enable successful operation of a NovoDS device, specific TCP and UDP ports should not be blocked by your network's firewall. If you are operating behind a network firewall ensure that the TCP and UDP ports used by NovoDS are open. For details on the ports used by NovoDS see Section 5.錯誤! 找不到參照來源。. For information on how to open specific ports, consult your router's user's manual.

1.5 Software Download and Installation

NovoDS comes with playlist editing and device management software available for both Windows and Mac computers. Please go to the Vivitek website (http://www.vivitekcorp.com) to download the latest version.

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Title	Version	Type
NovoDS Digital signage software V2.x (Windows XP, Vista, 7, and 8)	V2.1	
NovoDS Digital signage software V2.x (Mac OS 10.7 above)	V2.1	

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2. NovoDS Software Overview

There are two tabs available in the software, DS Playlists and DS Devices.

2.1 DS Playlists

This tab allows users to create and organize playlists for your digital signage, including

- Creating a Playlist
- Selecting or customizing a template
- Placing and editing your content
- Testing your Playlist
- Setting user preferences, including language and playlist path

2.2 DS Devices

This tab enables users to control and manage NovoDS devices over the network. Key features include

- Adding/Deleting NovoDS devices
- Grouping multiple devices, and synchronizing their playback
- Setting a specific playlist for a device or group
- Setting a schedule for different devices or groups
- Monitoring playback status of each NovoDS device

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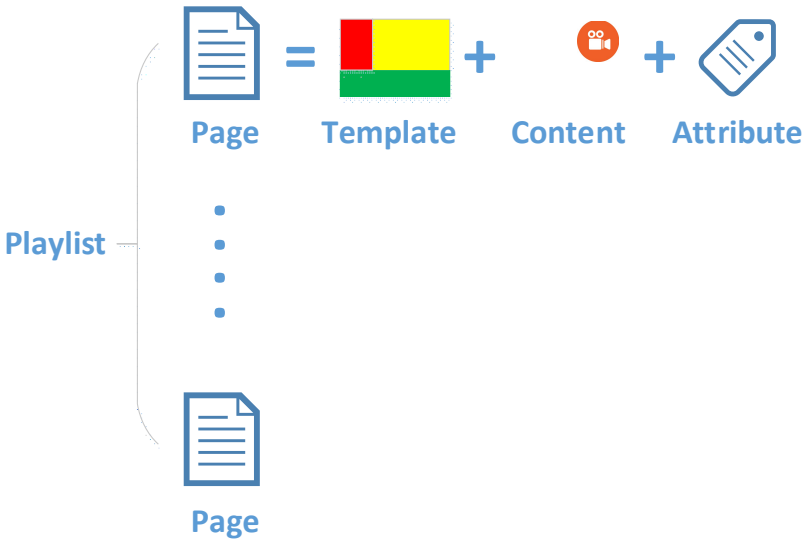
3. DS Playlists (Playlist Editing)

3.1 Terminology Definition

"Playlist" is the key concept in NovoDS software. Before we describe how to create a playlist, let's start with some terminology definitions.

- **Playlist**: a multi-media content package designed to be played on NovoDS devices, consisting of one or multiple pages.
- **Page**: a screen layout that is filled with content.
- **Template**: a screen layout that consists of one or multiple "regions", and, can be applied to any "page".
- **Content**: resources that can be placed in a "page", including text, images, music/audio, video, web pages, video streaming over IP, Twitter and RSS feeds, as well as weather, clock and Google Calendar.
- **Attribute**: mainly refers to associated playback characteristics such as duration, rendering effect, etc.

The following figure illustrates their relationship.



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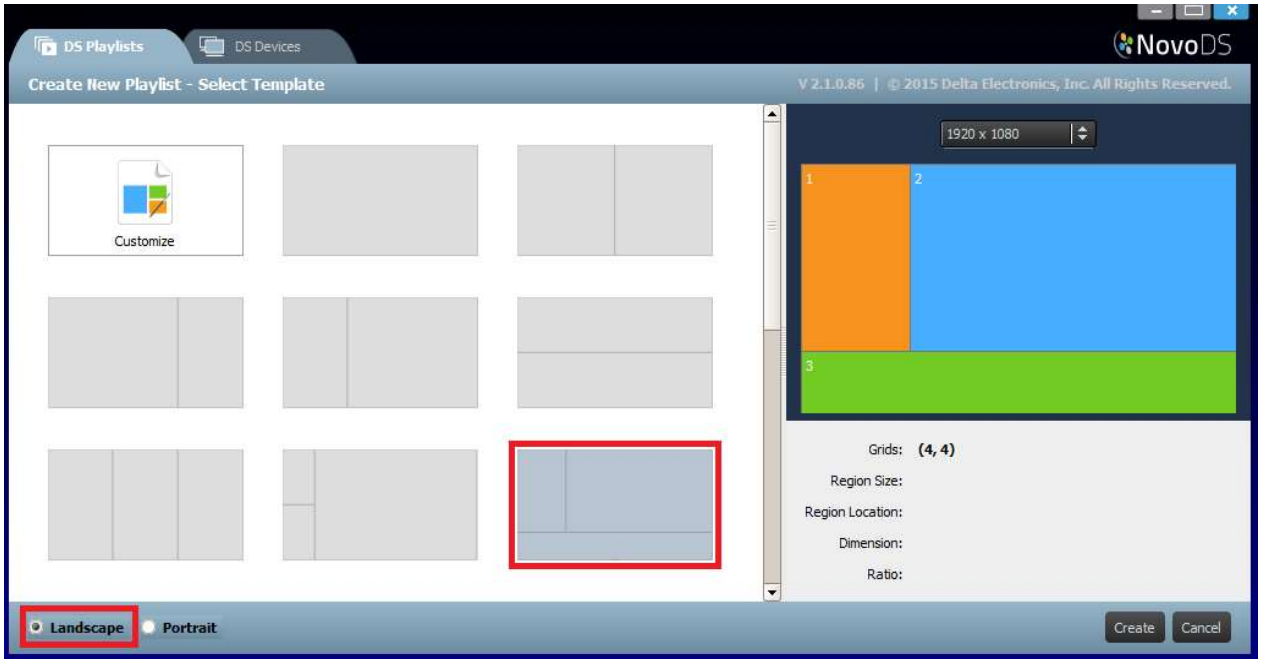
3.2 Creating a Playlist

3.2.1 Selecting a Template

NovoDS has 40 built-in templates in both landscape and portrait orientation.

a. To select a template, open the DS Playlists tab and select the **+Playlist** button from the Edit Playlist screen. You will be given the option of creating a custom configuration or choosing one of the 40 built-in templates.

b. Check 'Landscape' or 'Portrait' to match your screen orientation. Then select a template from by clicking on the desired one.
    a. Click on button "**Create**" to create this playlist.
    b. Click on button "**Cancel**" to discard the playlist creation.



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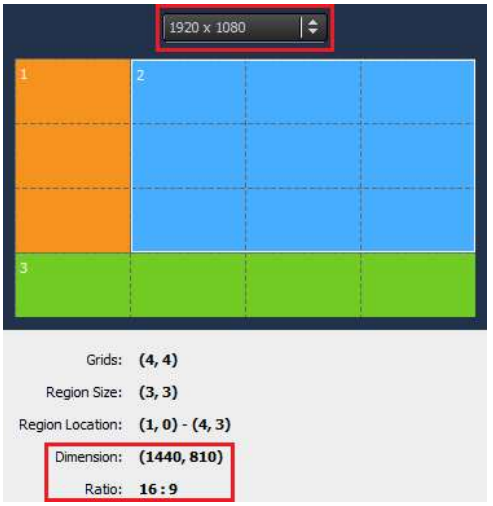
On the right side of the window,

- You can adjust display resolution
- You can find out each region's geometry by mouse-over.

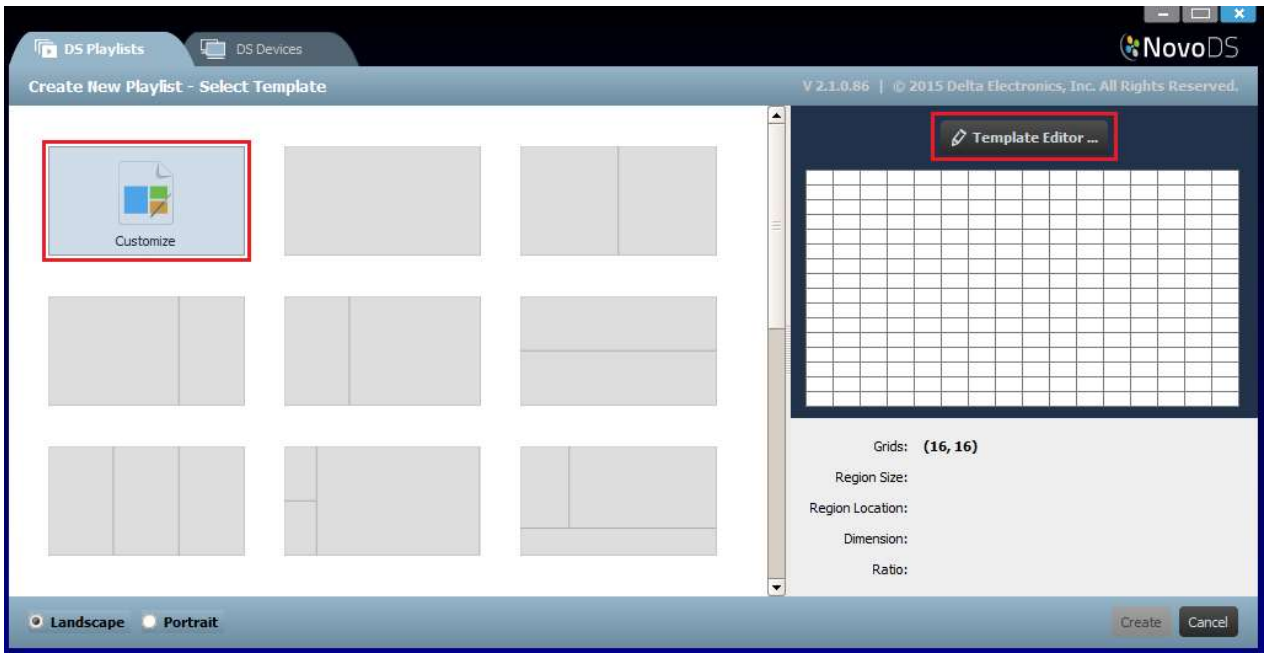


3.2.2 Creating a Custom Template

You also have the option of creating your own display configuration for your playlist.

a. Open the **DS Playlists** tab and select the **+Playlist** button from the Edit Playlist screen.

b. Click on "**Customize**" and then "**Template Editor**" to open an editor dialog.



c. The editor dialog shows a table grid, which will be used to defined regions within this customized template. You can adjust its column and row numbers through the two spinners

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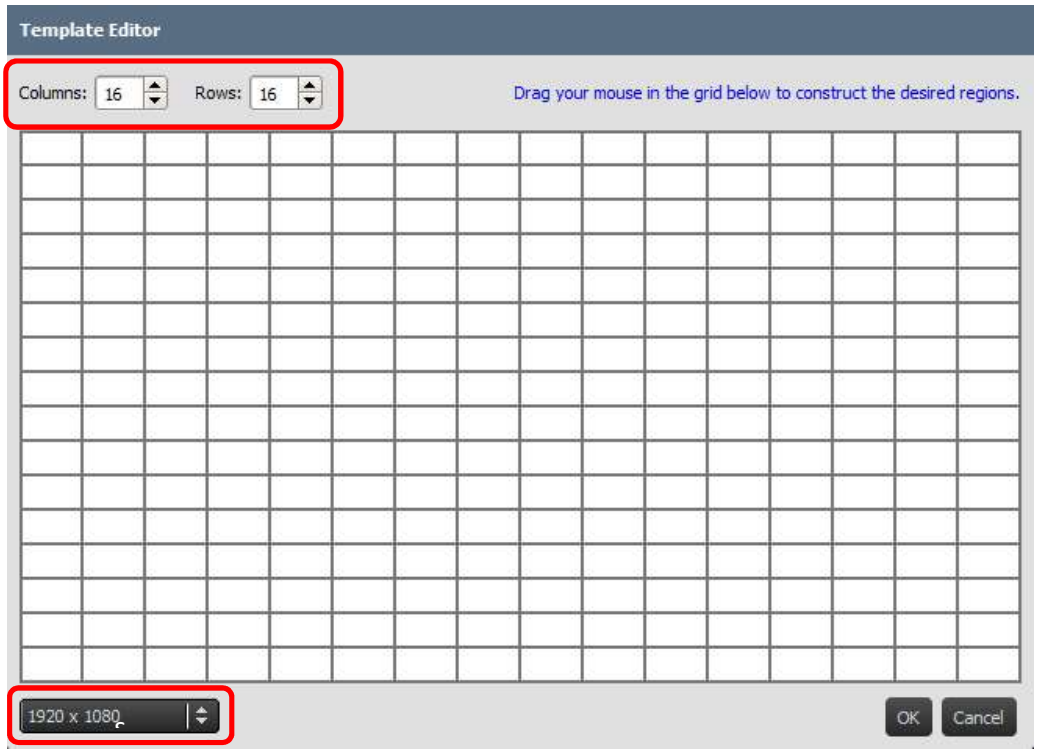
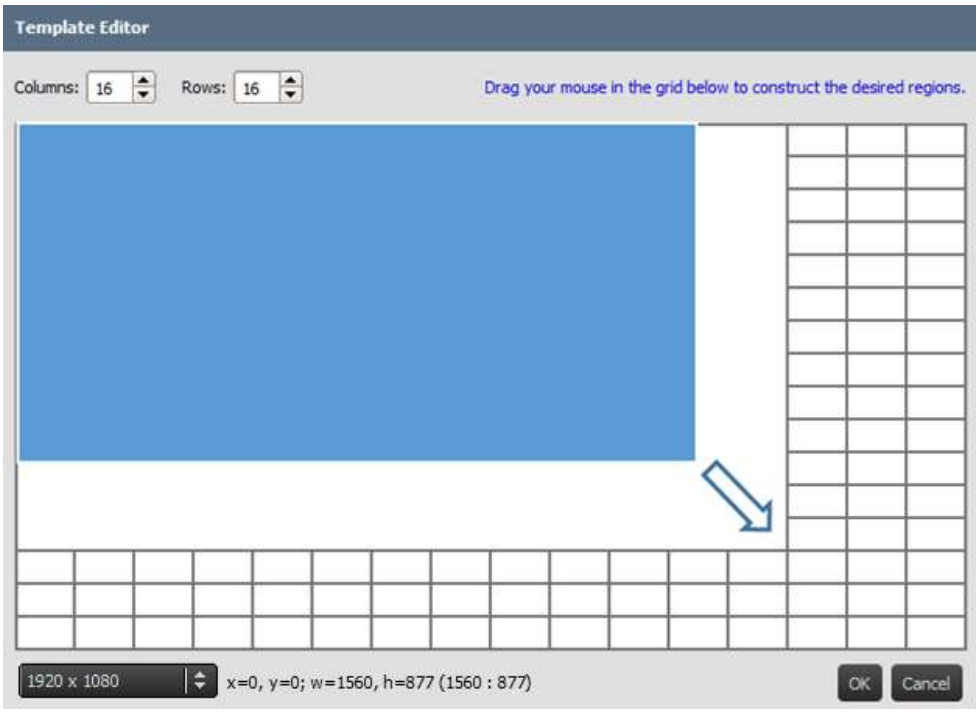
at the top-left corner. You also can change your desired resolution at the bottom-left corner.



d. Left-click your mouse and drag over grids to form the regions you desire.



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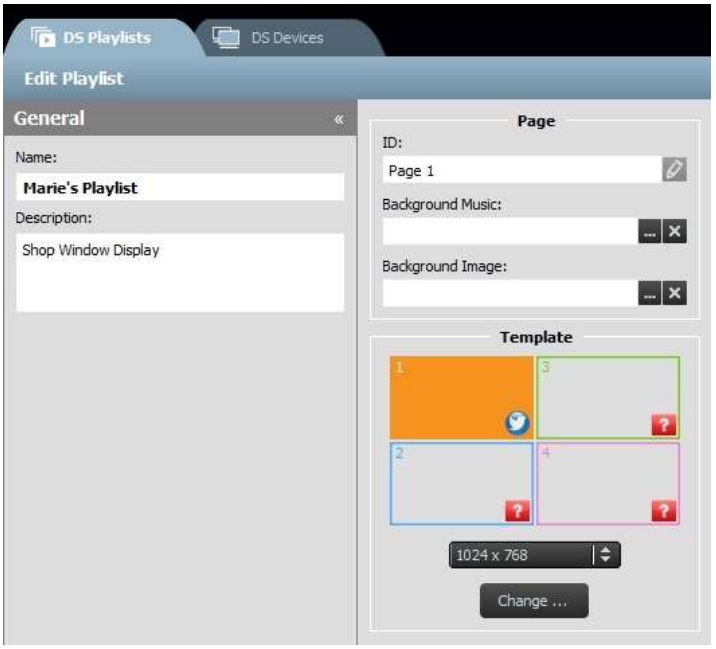
e. Click on "**OK**" to return to Template Selection screen. Then click on "**Create**" to create a playlist with this customized template.

3.2.3 Editing a Playlist

Once you settle on a template, you are ready to edit your playlist.

a. **Name**: Name for the playlist.
b. **Description**: Optional text for you to describe this playlist.
c. **Background Music**: Optional background audio (MP3 file). This audio will be played repeatedly unless video playback is in progress.
d. **Background Image**: Optional background image (wallpaper).
e. **Resolution Spinner**: Change display output resolution.
f. **Button "Change…"**: Change current template.



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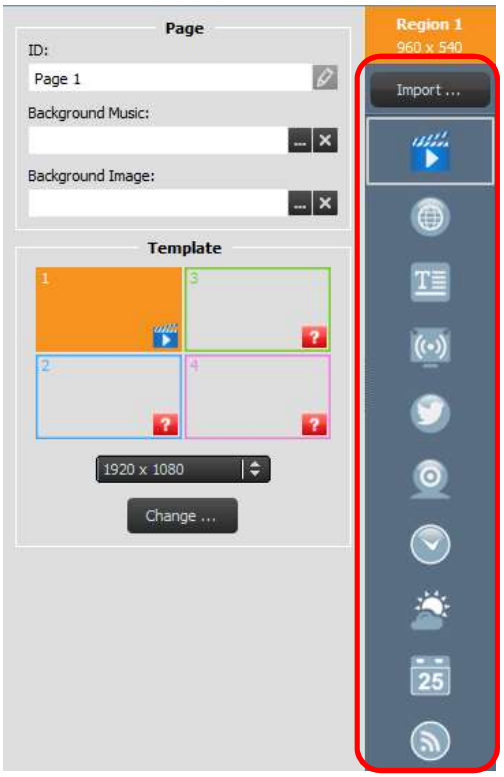
3.2.4 Adding Content to a Playlist

You are now ready to add content to the regions of your template. Select a region to edit. The region toolbar will appear.



1) Button "**Import…**" allows you to import content from a region of another playlist.
2) Other buttons allow you to add the following types of content:
   - **Media –** images and video clips
   - **Web Page* –** Online and offline content
   - **Text**
   - **IP Streaming* –** A video stream from an network server (IP)
   - **Twitter***
   - **USB Camera –** A video stream from a USB camera attached to the NovoDS device
   - **Clock –** An analog or digital clock
   - **Weather* –** A location-based weather report
   - **Google Calendar***
   - **RSS Feed***

**Internet or Intranet access is required to use this content type.*

NOTE: For each page of a playlist you can only have one region playing a video file at a time. This does not include a USB camera feed.

3.2.4.1 Importing from an Existing Playlist Region

This option allows you to import content and the associated attributes from a region of an existing playlist. To do so,

1) Click on button "Import…"
2) Then in the new dialog, select a "Playlist", then a "Page", then a "Region".
3) Click on button "OK" to complete this action.

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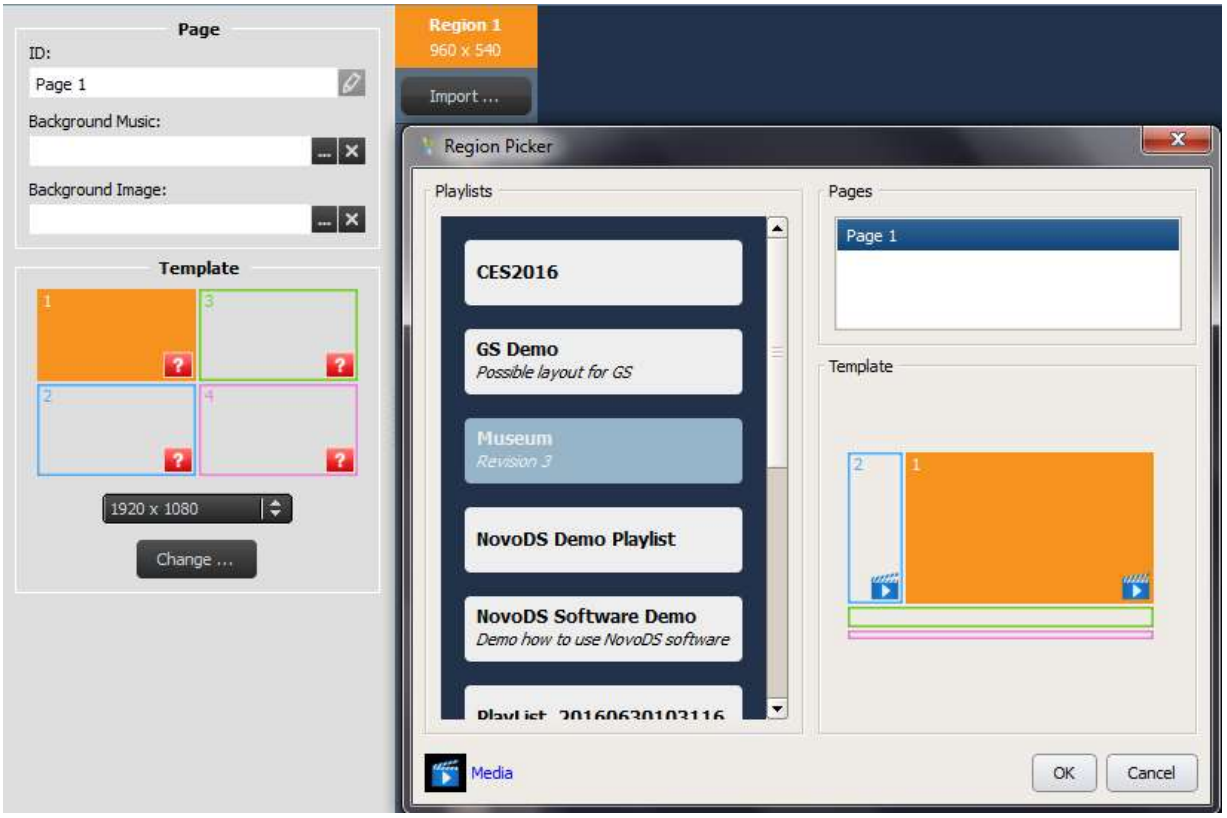

3.2.4.2 Adding Media (Image or Video files)

This option allows you to add one or multiple image and video files to a region. These multi-media files can reside on your local computer (called "Local Media") or a remote FTP/Samba server or Dropbox (called "Remote Media").

NovoDS supports image files with the following extensions: .jpg, .jpeg, .png, and .bmp. It also supports the following video file formats: .wmv, .mp4, .3gp, .avi, and .mov.

To add files from "Local Media":

a. Select "**Local Media**" tab, and then select **+File** and choose a media file with one of the above file extensions.

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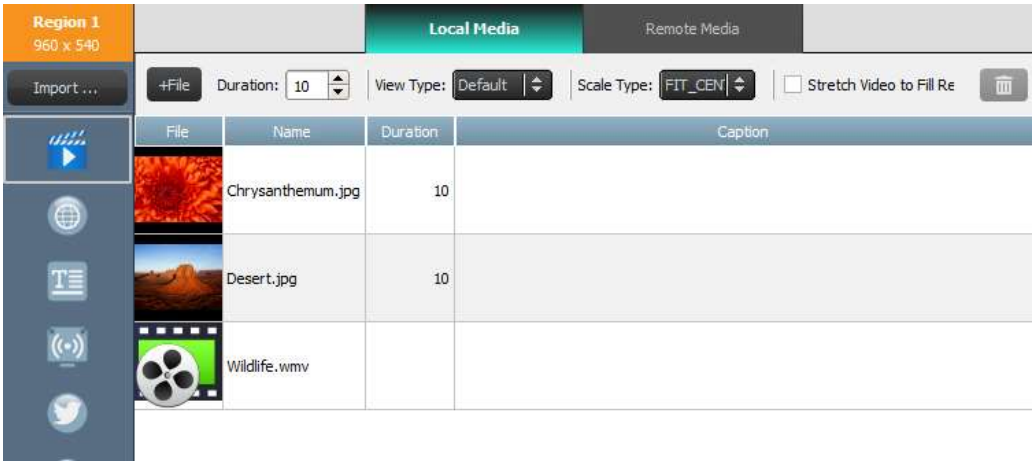
b. If you have chosen an image file, the image options will be displayed across the top of the page, including 'Duration', 'View Type' and 'Scale Type'. If you have chosen a video file, you will also get the option 'Stretch Video to Fill Region'.



c. Once the file is selected you will see the file information including a thumbnail image, the file name and location, the file duration, and the window for an optional caption.
d. To adjust the duration of the media file (if loading multiple files into the field), select the display time in the **Duration** field.
e. The **View Type** option allows you to select either a standard static view called 'Default' or a pan-and-scan visual effect called the 'Ken Burns Effect'.
f. The **Scale Type** option gives you three scaling options:
    - **Fit_Center**: Fit the entire image within the region without changing the aspect ratio
    - **Fit_XY**: Stretch the entire image to fill the region. (Aspect ratio may be changed.)
    - **Center_Crop**: Scale the image uniformly so that both dimensions (width and height) of the image will be equal to or larger than the corresponding dimension of the region. Aspect ratio of the image is not changed and the region is filled with the image.
g. An optional caption can be added to a media file by clicking on the **Caption** field and typing text.
h. Add additional images for a slideshow effect by selecting the **+File** button, choosing more media files, and following the steps outlined.
i. Media files can be removed from the playlist by selecting the file and selecting the trash can icon.

To add files from "Remote Media":

a. Select "**Remote Media**" tab, and then set up the proper properties to access your remote FTP/Samba server or Dropbox.
b. Field "**Update frequency**" allows you to define the period for NovoDS devices to retrieve updated content (if any).

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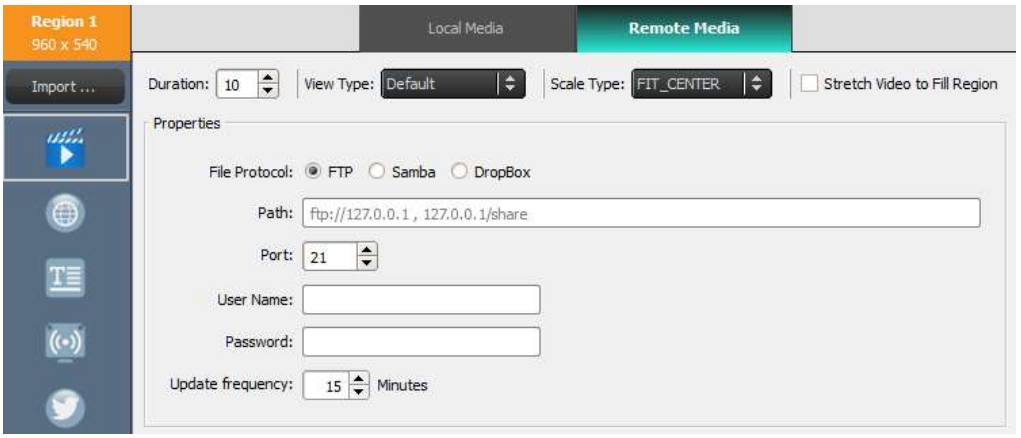
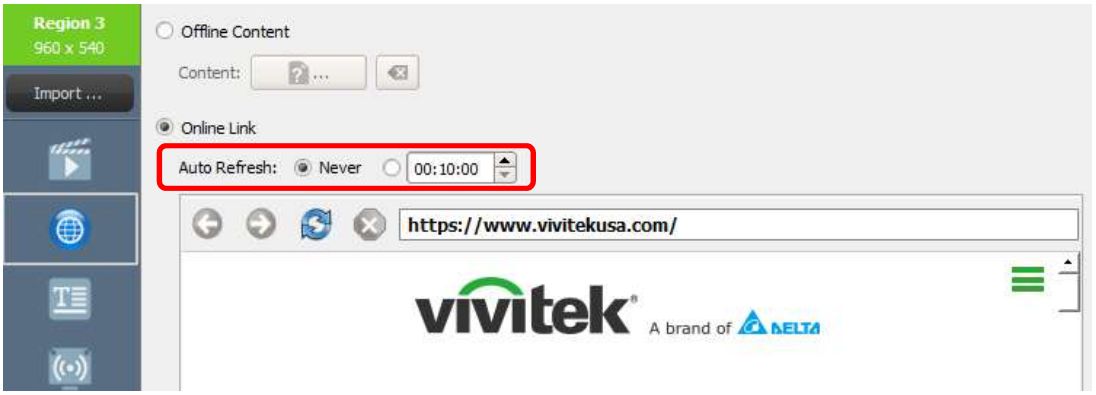
c. The other display properties, such as duration, view type, etc. are the same as "Local Media".



3.2.4.3 Adding Web Page

This option allows users to add the content from a web page to a region.



a. To begin, select the desired region and select the **Web Page** button from the region toolbar.
b. To choose an offline web page saved on your PC, select **Offline Content** and choose the folder containing your HTML/JavaScript/Media files.
c. To choose a live web page, select **Online Link**. Type the URL address for the desired Web page into the window and hit return or select the reload button to load the page.

> *NOTE: NovoDS cannot display flash animations or video contained in a Web page, so take this into account when choosing a Web page to display.*

d. You can also define the period for NovoDS devices to reload the webpage.
e. Unlike other media formats, web pages cannot be scaled, repositioned or stretched to fit a region. Take this into account when choosing a region to display web pages. It is a good idea to first test the web page in the desired region before saving the playlist.

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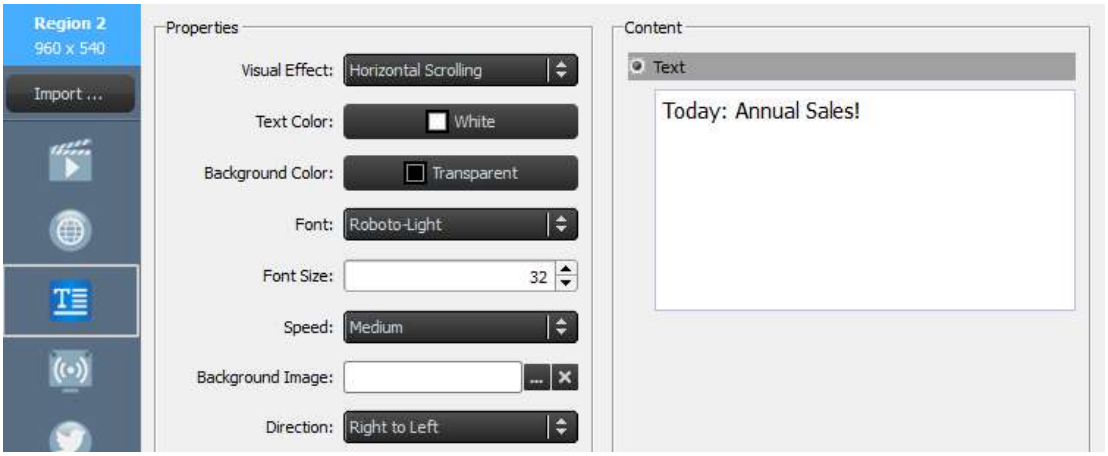
3.2.4.4 Adding Text

You can add text to a specific region. To begin, select the **Text** button from the region toolbar.

a. Select **Text** in the Content panel and type the desired text into the field below.



b. From the **Visual Effects** tab, you can choose 'Static,' 'Horizontal Scrolling', 'Vertical Scrolling' or 'Rich Text'.

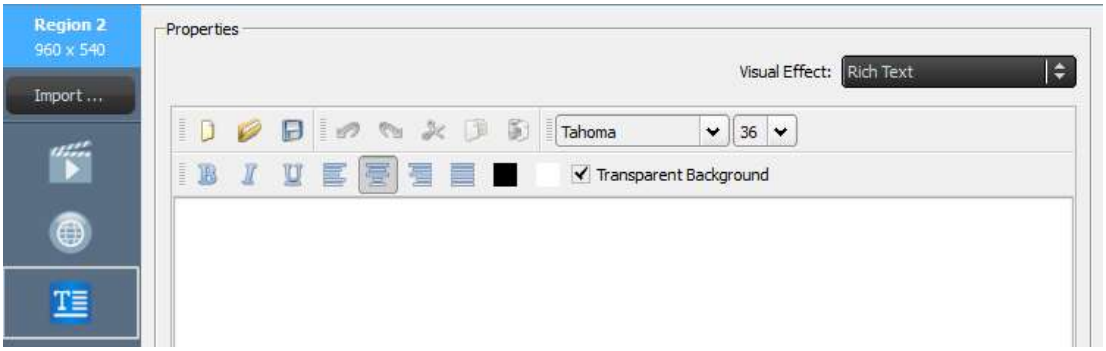
c. Adjust the **Text Color**, **Background Color**, **Font**, and **Font Size** from their respective tabs.

d. If you choose scrolling text from the **Visual Effects** tab, choose the scrolling speed from the **Speed** tab. In addition, if you choose **Horizontal Scrolling**, you are allowed to choose scrolling direction from right to left or vice versa.

e. If you chose 'Static' from the **Visual Effects** tab, select the alignment of your text from the **Align** tab. This tab only appears when 'Static' is selected.

f. Use the **Background Image** tab to select an image on which to overlay your text.

g. Choose 'Rich Text' to bring up a dedicated text editor for text input and editing.



h. Select **Save** and continue editing your playlist.

3.2.4.5 Adding an IP Stream

You can stream video content from an IP Camera from the Internet. NovoDS can broadcast IP streams with RTSP, UDP, and HTTP URL formats.

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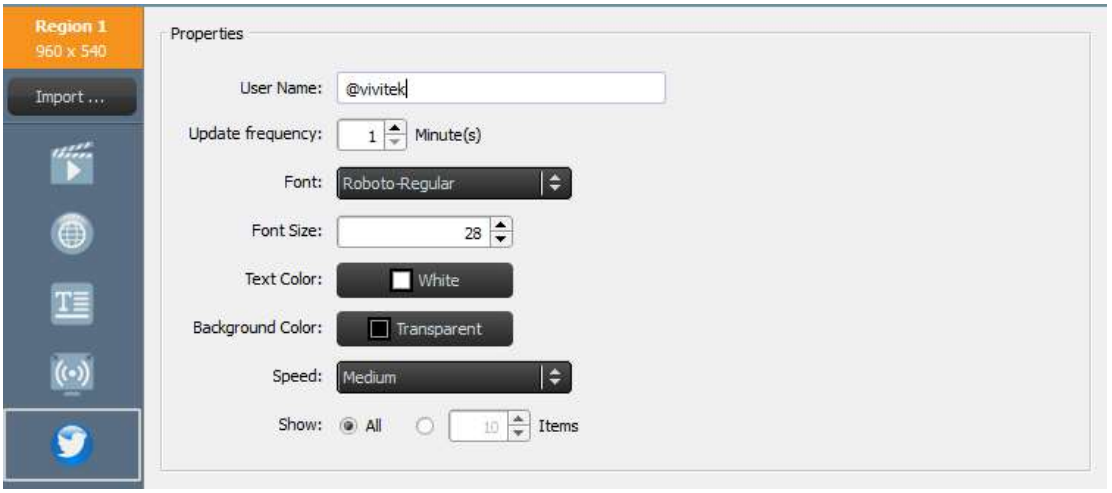
a. Select the desired region and select the **IP Streaming** button from the Region toolbar.
b. Enter the URL of the video stream in the **URL** window.
c. Select Save and continue editing your playlist.

> *NOTE: For each page of a playlist you can only have one region playing a video file at a time. This does not include a USB camera feed.*

3.2.4.6 Adding a Twitter Feed

You can add a Twitter feed to a region and have it scroll with live updates.



a. To begin, select the **Twitter** button from Region toolbar.
b. Enter the Twitter account name In the **User Name** window. Only one account name may be used per region.
c. Adjust the **Update frequency** tab to change how often the feed is updated.
d. Adjust the **Font**, **Font Size**, **Text Color**, **Background Color**, **Speed** and **Show** item number for the Twitter feed from their respective tabs.
e. Select **Save** and continue editing your playlist.

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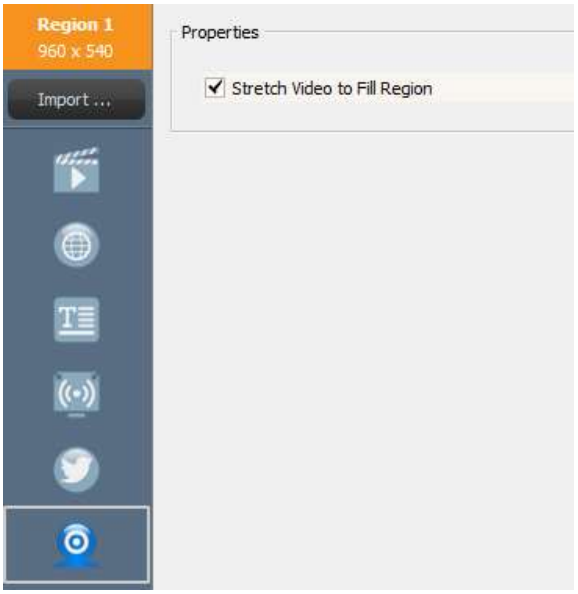
3.2.4.7 Adding a USB Camera Feed

You can display a live feed from a USB Camera that is attached to the NovoDS.



a. To begin, select the desired region and select the **USB Camera** button from the Region toolbar.
b. Select the **Stretch Video to Fill Region** tab to fill the entire display area of the region.
c. Select **Save** and continue editing your playlist.

3.2.4.8 Adding a Clock

You can add a digital or analog clock to display in a region.

a. To begin, select the desired region and select the **Clock** button from the region toolbar.
b. For an analog version, select **Analog Clock**. This will generate an analog clock based on the time and location of your NovoDS device.
c. For a digital version, select **Digital Clock**.

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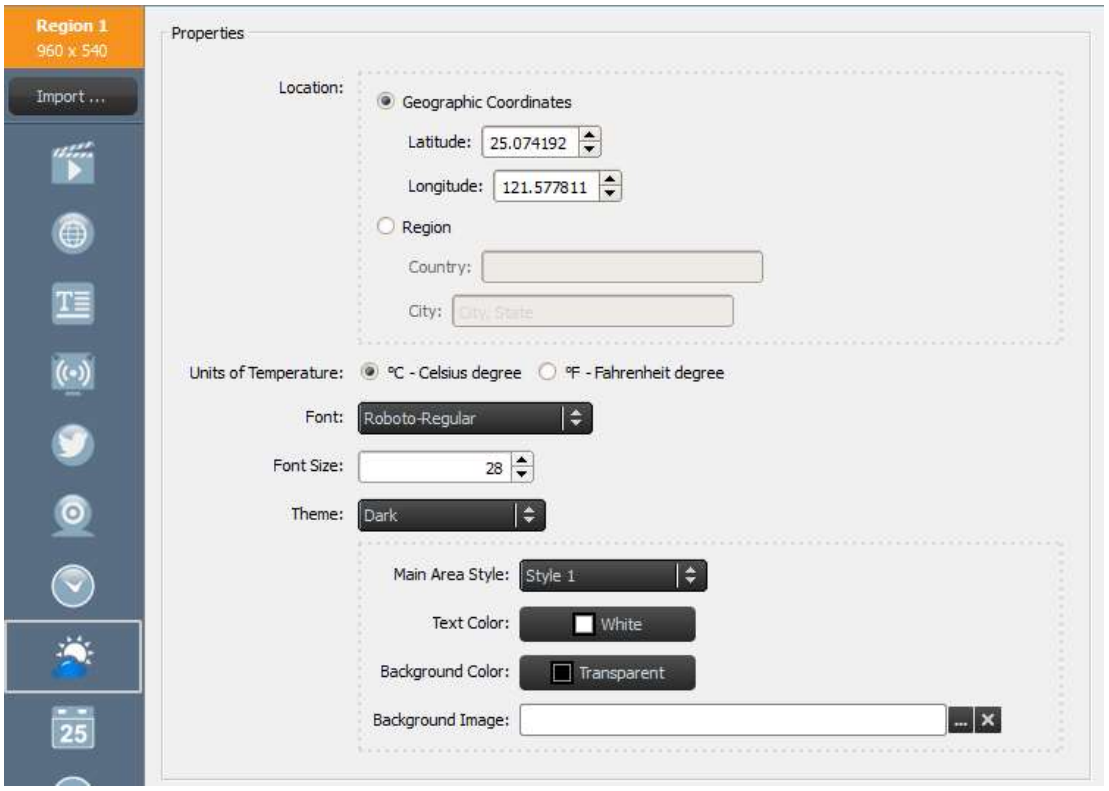
d. With the digital clock, you can adjust the following parameters in their respective tabs: **Font**, **Font Size**, **Text Color**, **Background Color**, **Time Format**, **Date Format**, **Order Style**, **Year/Month/Day/Week Style**, and decimal **Separator**.
e. Select **Save** and continue editing your playlist.

3.2.4.9 Adding a 5-day Weather Report

You can add a 5-day weather report for any geographic location to a region on your display.



a. To begin, select the desired region and select the **Weather** button from the Region toolbar.
b. For the location, you can either select the **Geographic Coordinates** button to enter the latitude and longitude of the location to be displayed, or you can select the **Region** button to enter a specific country and city in the fields provided.
c. Adjust the **Units**, **Theme**, **Main Area Style**, **Text Color**, **Background Color** and **Background Image** from their respective tabs.
d. Select **Save** and continue editing your playlist.

*NOTE: **Font Size** is kept for compatibility to NovoDS software Ver2.0 and older version. For the Ver2.1 and future version, this field is not used any more.*

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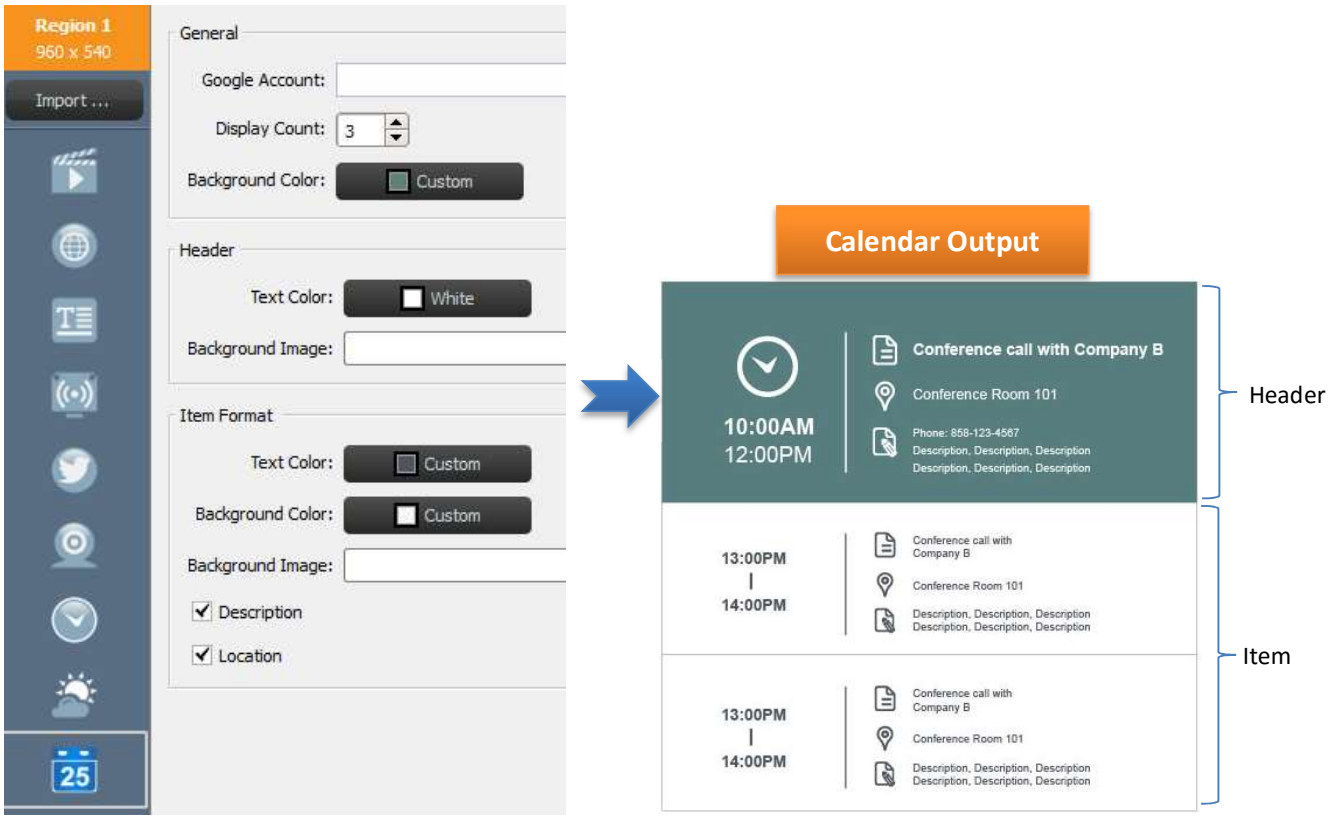
3.2.4.10 Adding Google Calendar

You can add a Google Calendar widget to a specific region. It basically displays today's events sequentially. The following figure illustrates the relationship between properties and display output. In particular,

- "Header" shows the current event
- "Item" shows upcoming events



a. To begin, select the desired region and select the **Calendar** button from the Region toolbar.
b. Input your account name in 'Google Account' field;
c. Define the number of event items for display and its background color.
d. Define header and item display formats including Text Color and Background Color.

NOTE: when you first preview or play the playlist with Google Calendar content, NovoDS needs you to login your Google account on NovoDS Android OS interface. You only need to login once unless you change Google account name.

3.2.4.11 Adding a RSS Feed

You can add a RSS feed to a specific region. To begin, select the **RSS** button from the region toolbar.

a. Enter the RSS address in field "**Feed (URL)** "

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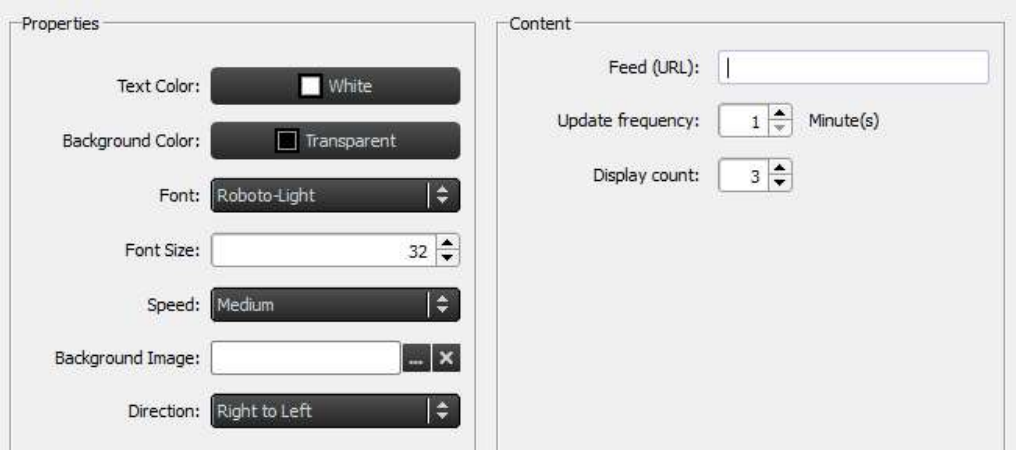
b. Adjust the **Update frequency** tab to change the frequency of feeds in the region.
c. Adjust the **Display count** tab to change the amount of feeds displayed in the region.
d. Set display properties including **Text Color**, **Background Color**, **Font**, **Font Size**, **Speed**, **Background Image** and **Direction**.
e. Select **Save** and continue editing your playlist.



3.3 Editing Pages

Pages is designed for users to have multiple layouts within a playlist. Each page has its own layout parameters. You can also duplicate certain pages to retain a layout but change the displayed content within that template.

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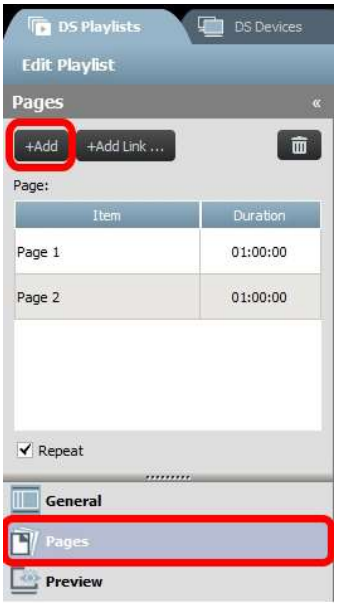
3.3.1 Adding Pages to Playlists

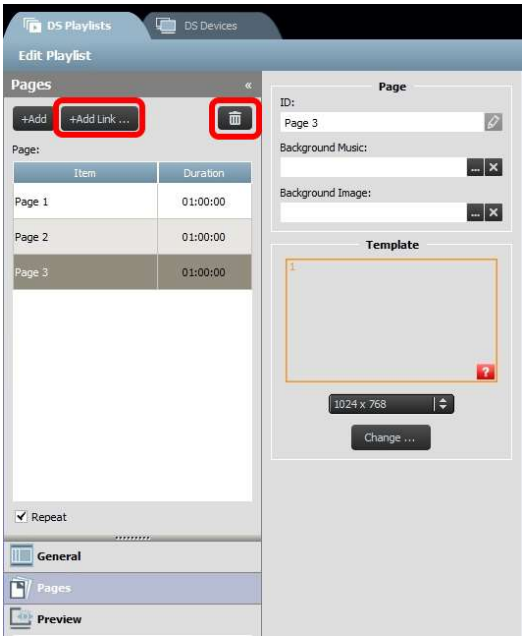
Each template created for a playlist automatically counts as one page. To add additional pages:



a. On the Edit Playlist screen, select the **Pages** button from the lower left corner.
b. To use a completely new layout for the new playlist page, select the **+Add** button. This will open the Choose Template window.
c. Select either a built-in template or custom design a template (see *3.2.2 Creating a Custom Template*) and select **Save**. The new page will appear in the Pages list and be named as 'Page 2.'
d. To add content to the new page's regions, select it in the Pages List and edit its regions based on the steps detailed in *3.2.4 Adding Content to a Playlist*.

3.3.2 Managing Pages within a Playlist

You can change the order of pages, duplicate or delete pages as well as adjust the playback duration in order to build your overall display presentation.



a. If you want to duplicate pages, select the page to be duplicated from the Pages List. Select the **+Add Link** button from the top. That page and its layout of regions will be duplicated below. You can rename the page in the **ID** field.
b. To reorder the pages of a playlist, select the page to be moved from the Pages List and drag up or down to the desired position.
c. If you want to delete a page from a playlist, select the page to be deleted within the Pages List and select the **Trash** button. A dialog box will appear and select 'Yes' or 'Cancel' to confirm.
d. To change the duration of a page, double-click on the time value next to the page on the Page list.

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e. The pages of your playlist are automatically set to broadcast on repeat. To have the playlist broadcast only once, de-select the **Repeat** button.

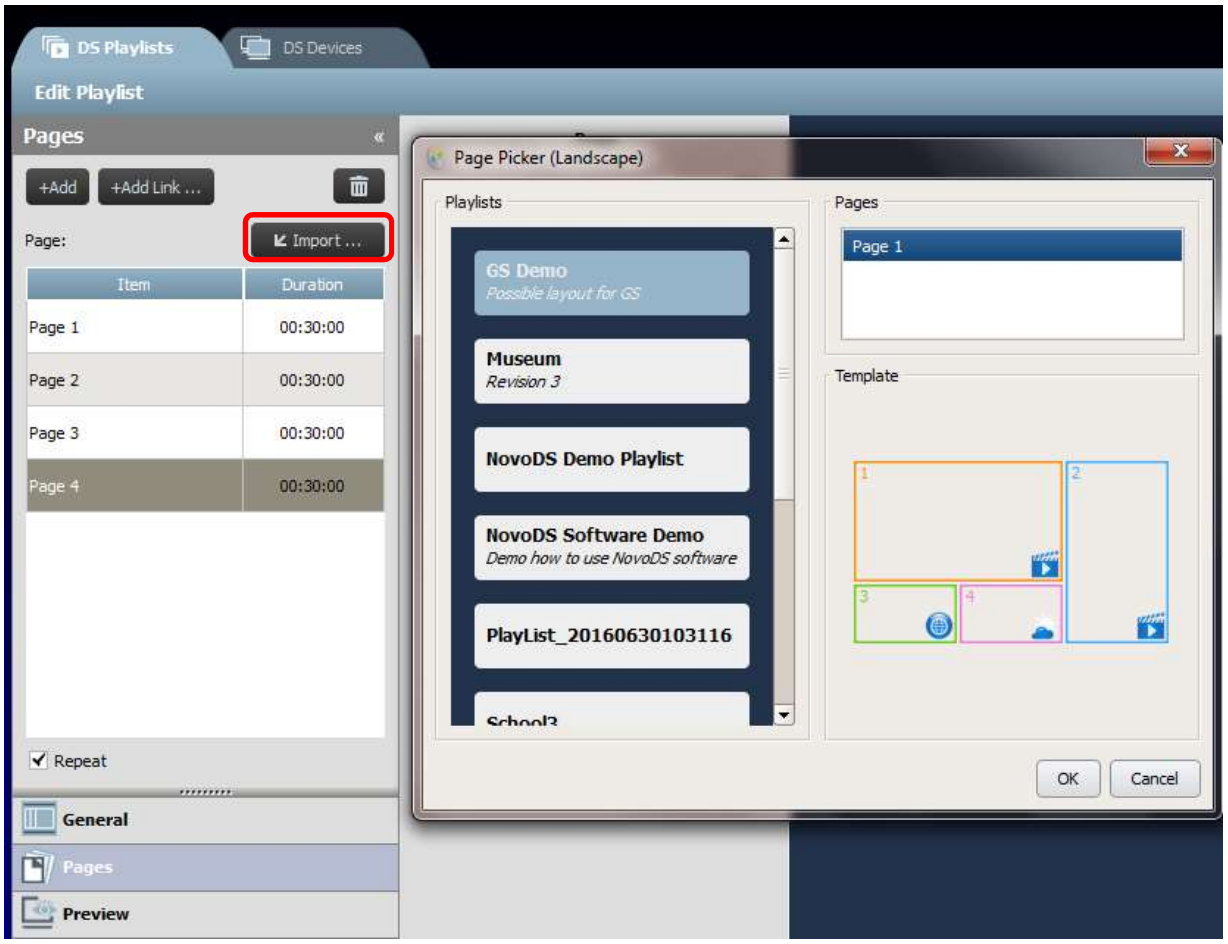
3.3.3 Importing a Page from another Playlist

You can import a new page from an existing playlist. To do this:

a. Click **Import…** button, then "Page Picker" window pops up.

b. Select a playlist from "Playlists", and then a page.

c. The "Template" box will display the template of the selected playlist. Once you click **OK**, the whole page will be imported into the current playlist.



3.4 Previewing a Playlist

After a playlist is created, you can use "Preview" feature to upload it to a NovoDS device or "**NovoDS Simulator** (for Android Tablets)" to view its actual visual results. To do so,

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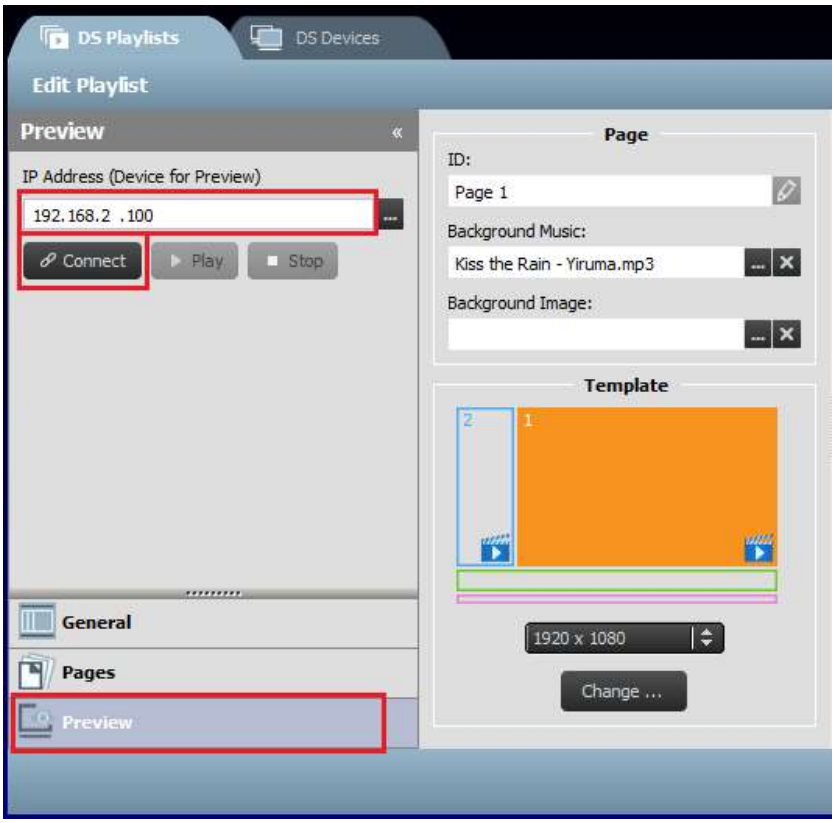
a. Click on "Preview" tab on the left pane, and then enter the corresponding IP address of the NovoDS device or the Android Tablet running "**NovoDS Simulator**".
b. Click on button "Connect" to connect to the device.



c. Click on button "Play" to start the content synchronization and playback afterwards. You can notice that a snapshot of the actual playback is shown right below the "**Connect**" button.

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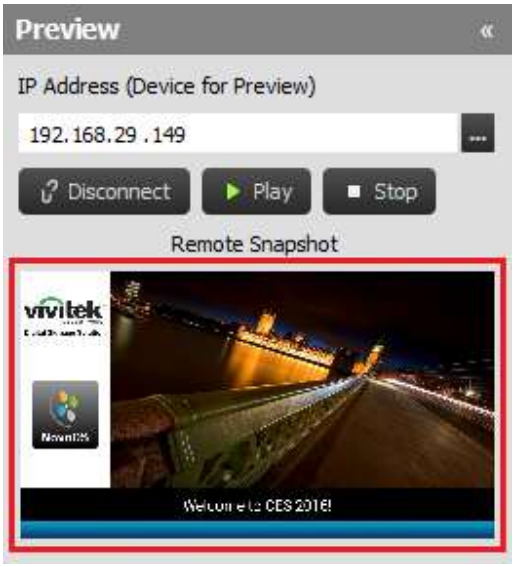
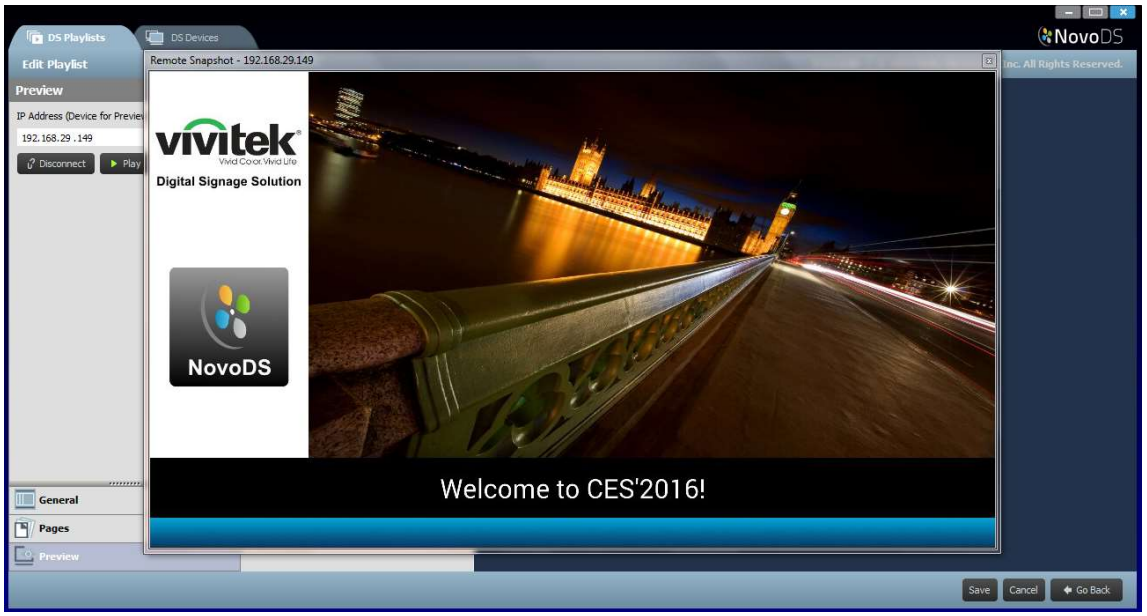


d. If you click on the snapshot display, it will pop up in a bigger window, as shown below.



3.5 Exporting a Playlist

The **Export Playlist** function allows the user to save a playlist onto a microSD card for use in Stand-Alone Mode, or to create a copy to be imported to other computers. To export a playlist:

a. From the DS Playlists screen, move the cursor over the playlist you want to export.
b. Click on the "**Export**" icon (highlighted in RED) in the upper left corner of the playlist.
c. You will be prompted for a selection of folder.
    - If you want to export it as a startup playlist, select microSD card.

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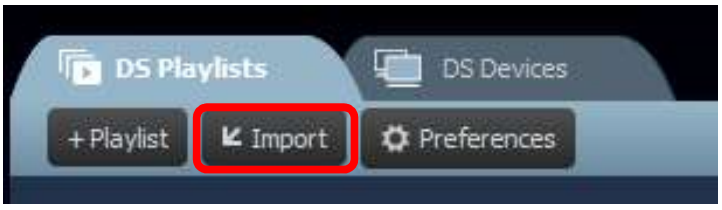
- If you want to create a copy for "importing" to other computers, you can select any folder.

d. When the dialog box asks "Export as NovoDS' Startup Playlist?"
   - Select **Yes** to export it as a startup playlist
   - Select **No** to export it as a regular copy of the playlist

3.6 Importing a Playlist

You can import playlists from other computers.

a. Refer to Section 3.3 for how to export playlists.
b. Select the **Import** button from the main page.
c. Locate and select the playlists to be imported.



3.7 Configuring Preferences

"Preferences" button allows you to configure two user preferences.

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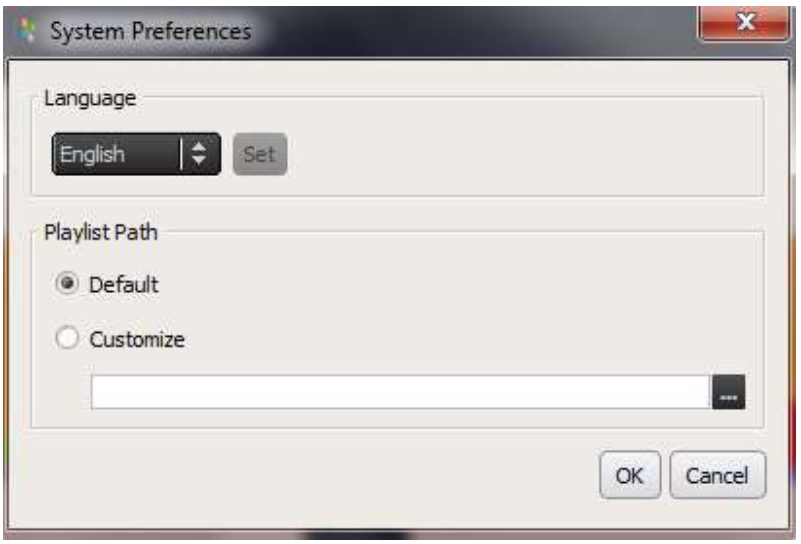
1) Language

   This dropdown list will allow you to set up the local language of this software.

2) Playlist Path

   This is the folder for saving playlists.

   - The default folder is "`C:\Users\{Username}\NovoDS.PlayLists`"
   - You can change it to any local folder or a folder over your network.



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4. DS Devices (Device Management)

This feature allows users to manage one or more NovoDS devices from a single computer over a network, including synchronizing playlists, monitoring playback, etc.

NOTE: All devices must be connected to the same network as the computer controlling them.

4.1 Adding a Device

Before being managed by NovoDS software, the devices must be added into the device list. NovoDS software supports adding a device manually or through auto discovery.

4.1.1 Adding a Device Manually

a. Go to the DS Devices tab and select the **+Device** button. Click on "**New**".

b. Enter the name and the IP address for the device. Users can also select a playlist and group from the corresponding pull-down menus. Select **OK** to complete the action.

c. Go to your devices list on the right of the screen. You can connect to a specific NovoDS device by navigating to it and selecting the connect icon .

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d. For each device on this list, you will see fields for: **Name**, **IP address**, **Group**, **Playlist**, **Action**, as well as **Description** (optional).

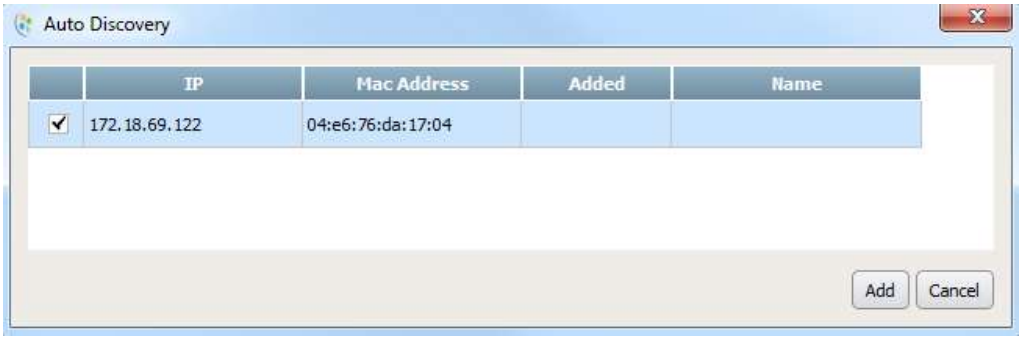
e. To assign a playlist for a particular device, double-click the playlist field for that device and choose a playlist from the pull-down list.

> *NOTE: You will need to have either created or imported playlists first (See 3.1 and 3.3 Editing Pages).*

4.1.2 Adding a Device Through Auto Discovery

a. Go to the DS Devices tab and select the **+Device** button. Click on "**Auto Discovery…**"

b. A new dialog window, "Auto Discovery", pops up to list NovoDS devices found in the same subnet. Highlight the desired and then you can add them to the device list by clicking on button "**Add**".



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4.2 Editing a Device List

Individual controls:

Users can control individual devices with the **Action** buttons for each device.

a. Connect to an individual device by selecting the **Connect** button for that device .

b. Send a playlist to a device and play it by selecting the **Play** button .

c. Stop play by selecting **Stop** button .

d. Manage device settings by selecting the **Settings** button . The next section 4.2.1 has detailed description about device setting.

e. Manage the schedule settings by selecting the **Schedule** button .

4.2.1 Device Setting

After connecting a device successfully, you can view and change a device's settings through 'Remote Device Settings' window.

General:

- It shows basic device information.
- You can change its language setting, or restart the device from this dialog.

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Playlists:

- It shows a list of playlists currently stored on this device.
- You can delete any playlist from this dialog.

Network:

- It shows basic network properties.
- You can configure WiFi connection, or turn it off completely from this dialog.

Display:

- It shows display properties
- You can change resolution, orientation, zoom ratio and HDMI-CEC setting.

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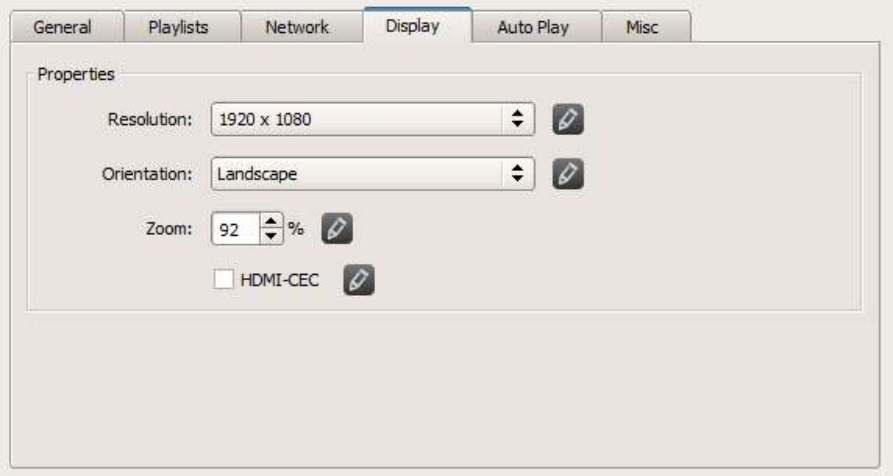
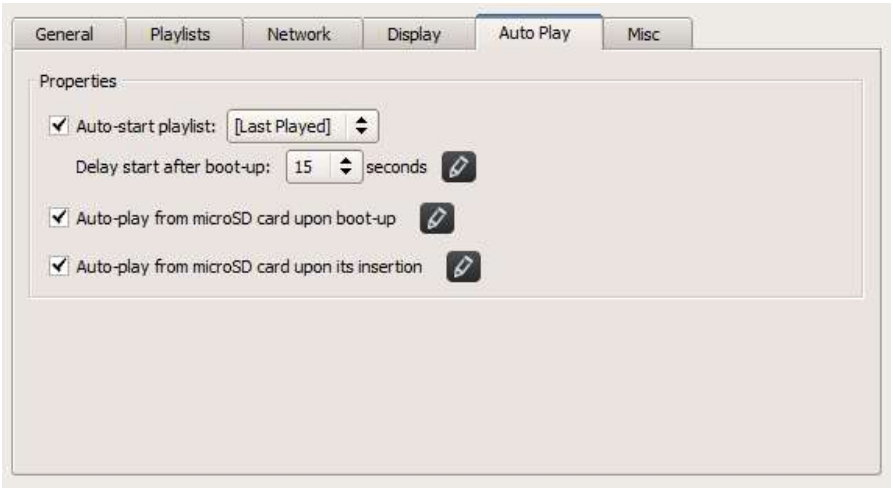


Auto Play:

- You can adjust auto-play settings.



Misc.:

- You can set device password, enable/disable Common Alerting Protocol (CAP) and trigger firmware update.

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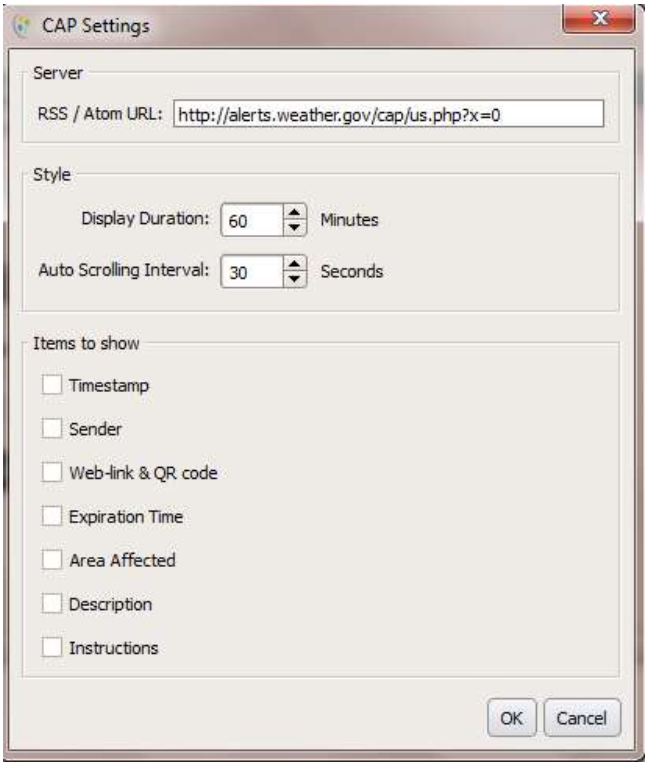
CAP is an XML-based data format for exchanging public warnings and emergencies between alerting technologies. CAP allows a warning message to be consistently disseminated simultaneously over many warning systems to many applications. Its latest version is 1.2, please refer to https://docs.oasis-open.org/emergency/cap/v1.2/CAP-v1.2-os.html for details.

NovoDS supports CAP, which is a big value to customers. It allows them to get alerting message as soon as it is disseminated by the governments. You can define CAP settings via the following window including its RSS/Atom URL to get message, its display style and display format.



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4.3 Creating a Group

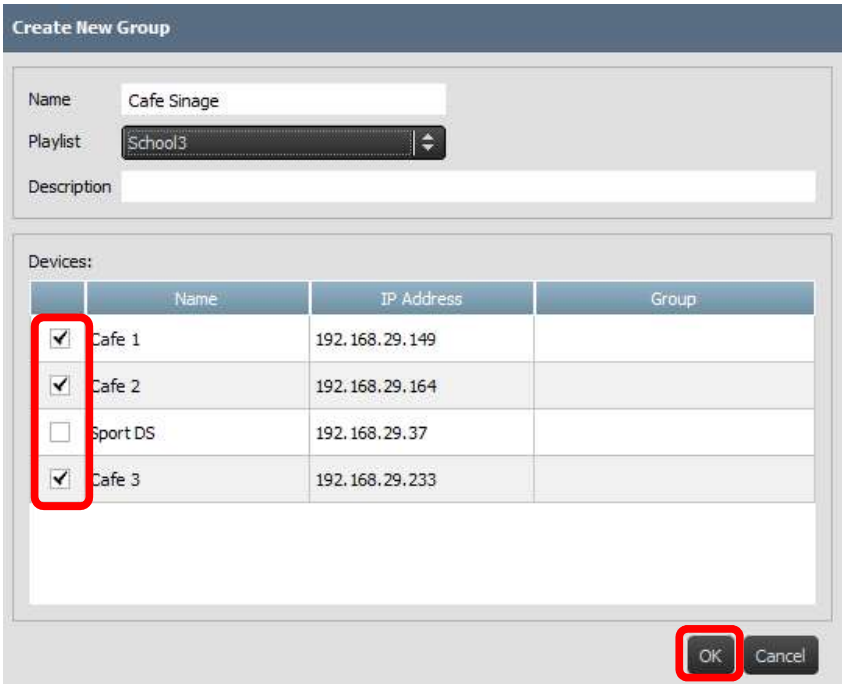
Devices can be grouped together and managed collectively.

a. To create a new group, select the **+Group** button.

b. A **Create New Group** window will open, allowing the user to name the group, add an optional description and select a playlist for the group.

c. Once a name, playlist and description are chosen, add devices to the group by checking the corresponding boxes.

> *NOTE: Only devices that have already been added to the NovoDS software will appear in the devices list of the **Create New Group** window.*



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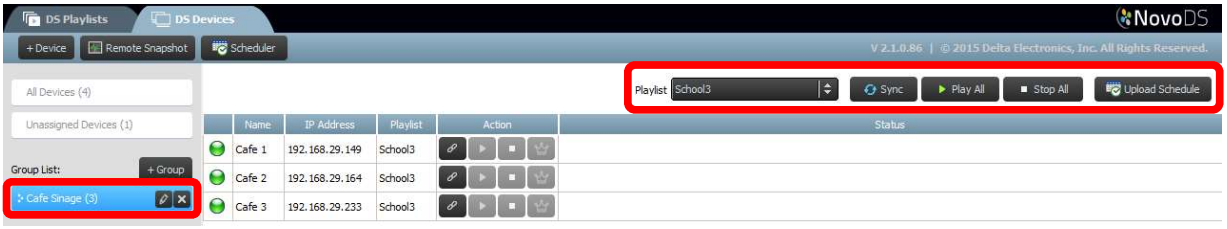
d. Select **OK** to finalize the group.
e. The group is now shown in the Group List on the left side of the DS Devices page.
f. Select the group name from the Group List to bring up the devices in that group.



g. The devices can now be synced and played simultaneously or individually:
   The **Playlist** tab allows you to assign a playlist to all the devices in the group.
   The **Sync** button downloads the playlist content to all the of the group's devices.
   The **Play All** button begins simultaneous playback on all devices.
   The **Stop All** button stops all devices in the group.
   The **Upload Schedule** button assigns a pre-made schedule to the group (*See section 4.4 Schedule*).
h. Devices within the group can also be controlled individually from the **Action** buttons.

4.3.1 Synchronized Playback

Within a group, you can synchronize their playback timing, meaning that all devices in this group will display the same content "almost" at the same time. To do so,

1) Select one NovoDS device as the "Master Unit" by clicking on button. The others become the "Follower Units" automatically
2) Synchronize the desired playlist to all these devices
3) Once the "Master Unit" starts playback, all "Follower Units" will synchronize their playback timing to this "Master Unit".

NOTE: Before synchronized playback, please make sure all NovoDS devices within the group have the same playlist you are planning to play. If not, please use Sync function to synchronize the target playlist to all NovoDS devices.

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4.4 Schedule

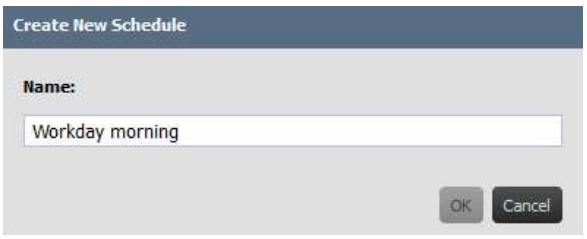
This feature allows users to assign a playlist to play at a specific time of day and then apply that schedule to a device or group.

4.4.1 Creating a Schedule

To create a schedule:

a. Go to the DS Devices tab and select the **Scheduler** button.

b. The **Create New Schedule** window will appear. Input a name for the schedule and select **OK**.



c. Your new schedule will appear on the left side of the Scheduler page. A schedule consists of one or multiple schedule items, each of which defines timing rules for its specific slot. Select a schedule to start the editing.

d. Field "**Default Playlist**" will be played when there is no playlist scheduled at any given time. Field "**Wait**" defines the transition duration when switching from one schedule item to another.

e. To add a new schedule item, select the **Add…** button. The **Edit…** button will edit an existing schedule item. To delete a schedule item, select **Delete**. Uncheck the box to the left of the schedule item to disable it from the current schedule without deletion.

f. You can indicate a default playlist, and it will be played once the device has no playlist scheduled at that moment. You can define what many seconds to wait before the default playlist is being played.

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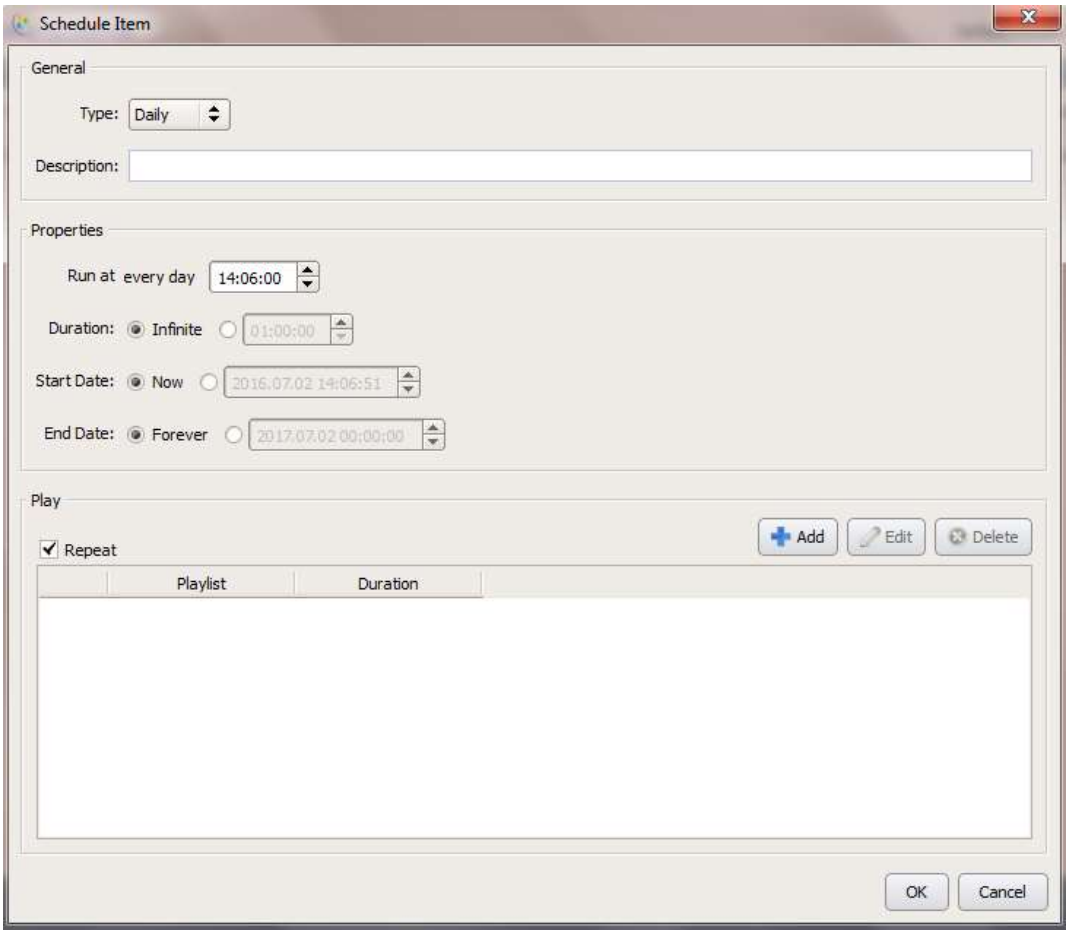
g. When adding or editing a schedule item a properties window will appear where you can set its timing rules:
The **Type** tab sets the schedule item to apply either once, hourly, daily or weekly.
The **Description** field allows users to add an optional description for the schedule item.
The **Run** field defines playback start time.
The **Duration** field allows users to set the duration of the schedule item to 'Infinite' or a set length of time.
The **Start Date** and **End Date** options allow users to define the start and end dates.
The **Playback** box allows users to add multiple playlists to be played one after another.
Option **Repeat** allows users to repeat the playback of multiple playlists.



4.4.2 Importing a Schedule

To import a previously saved schedule:

a. Go to the DS Devices tab and select the **Scheduler** button.

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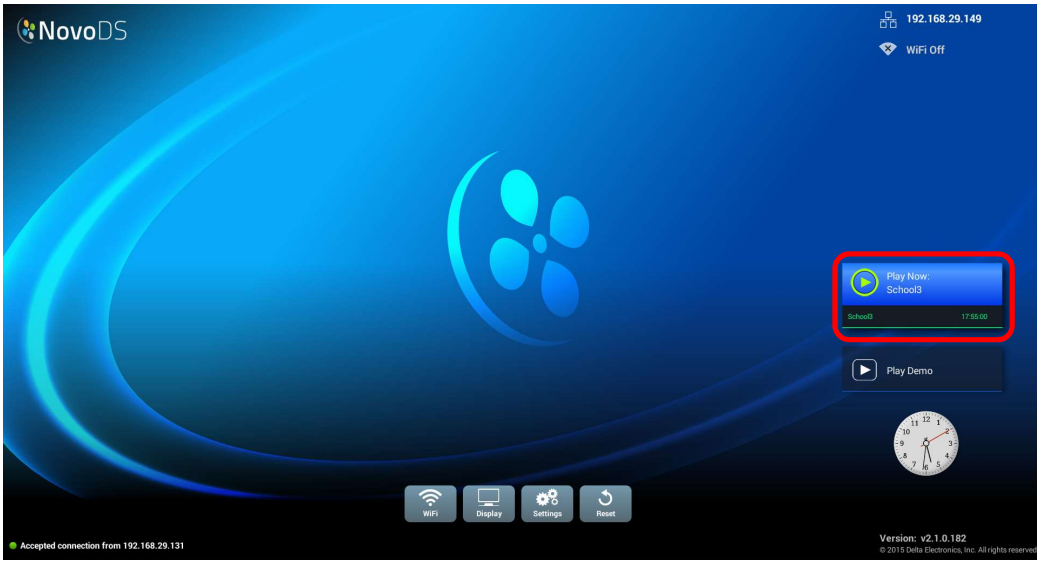
b. Select the saved .ndss file from your system to import and select **Open**.
c. The imported schedule will appear on the left of the Scheduler page.

4.4.3 Assigning a Schedule

To assign a schedule to a NovoDS device or group:

a. On the DS Devices tab, select the schedule button next to a specific device and select the schedule you want to apply.
b. If you want to apply a schedule to a group, choose the group and select the **Upload Schedule** button. Select the schedule you want to apply and select **Sync** to update.
c. Once schedules have been synchronized to a device or group, the NovoDS home screen will display all upcoming scheduled playlists.



4.5 Remote Snapshot

This feature allows users to monitor NovoDS device playback in front of their computers. To do so,

a. Go to the DS Devices tab and select the devices or groups from the left and then select the **Remote Snapshot** button.

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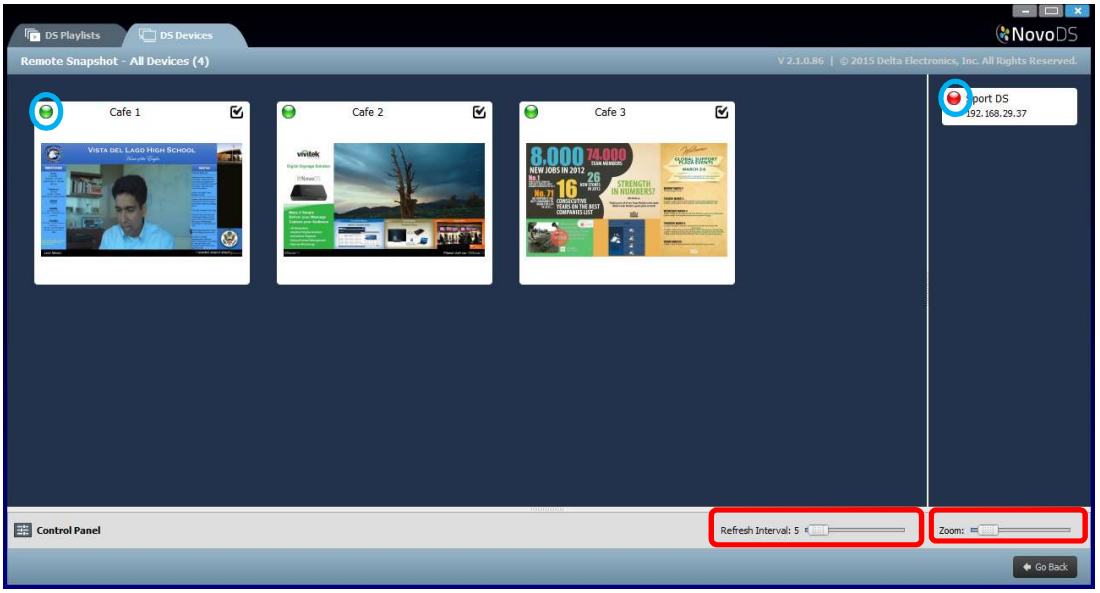
b. The **Remote Snapshot** page will appear and show large thumbnails of your devices.



c. A green light at the top left of a thumbnail indicates a device that is connected, while a red light indicates devices that are.
d. Use the **Zoom** toolbar to increase the size of the thumbnails on the screen. Use the **Refresh Interval** to define how often you want device snapshot can be refreshed.

4.6 Overlaying a Message

This feature allows users to display a message on top of the current playback, such as an emergency alert, announcement, etc. To do so,

a. In the Remote Snapshot page, Select the **Control Panel** button to access the control panel
b. Select the **Overlay Message** tab in the Control Panel
c. Select the **Content** button to insert the content you want to overlay. You can choose between **Rich Text**, **Slideshow** (images) or the **Web Page** buttons. When you have finished choosing the content to add select **OK** to return to the **Overlay Message** tab.
d. Choose the size of the overlay message in the **Dimension** tab.

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e. Choose the amount of time you want the overlay to appear by selecting either 'Infinite' or a specific amount of time in the **Duration** tab.

f. Select the devices you want to assign the overlay message to by checking/unchecking the top left of a device's thumbnail in the Remote Snapshot window. To choose to overlay the message to all the devices, use the **Select All** button . Use the **Unselect All** button to de-select all the devices.

g. In the Action menu select either the **Show** button to display the message or the **Hide** button to hide the message on the devices. The overlay message will appear in the icon at the top of the Remote Snapshot page as well as on the display device.

h. Select **Go Back** to return to the DS Devices page.

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5. Network Configuration

NovoDS is a TCP/IP-network-based device and the communications between a NovoDS device and your computers are achieved through several TCP and UDP ports. The following table summarizes all the port numbers being used.

Port Number	Type	Description
20110	TCP	Port for NovoDS command and control
20111	TCP	Port for NovoDS file transfer
20112	UDP	Port for status reporting, real-time message show/hide, screenshot start/stop
20113	TCP	Port for upgrade
20114	TCP	Port for screenshot
20115	UDP	Port for synchronized playback among devices
20116	UDP	Port for device auto discovery
20117	TCP	Port for uploading files to NovoDS

To enable successful operations of a NovoDS device, the above ports should not be blocked by your network's firewall.

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6. Device Specifications

Device	
Feature	Specification
Display Resolution	• 1280 x 720 (16:9, 720P at 60 FPS), • 1920 x 1080 (16:9, 1080P at 60 FPS) • 3840 x 2160 (16:9, UHD 4K at 30 FPS)
Networking Connection	• Wi-Fi (802.11 AC, 2.4 GHz & 5 GHz) • Ethernet
Storage	• Internal: 8GB (5.4GB available) • External: micro-SD card (up to 64GB), USB disk
PC Requirements	
OS	• Windows 7 and above • Mac OS 10.7 and above

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