



# StackSignage

## StackSignage 2.0

User Guide



## StackSignage 2.0 : User Guide

### Trademark Information

Delta Media Server is a trademark of 7thSense Design Ltd. Brand or product names may be registered trademarks of their respective owners. Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

### Copyright Information

All Rights Reserved. This document is copyrighted © by 7thSense Design Ltd and shall not be reproduced or copied without express written authorisation from 7thSense Design Ltd.

The information in this document is subject to change without notice. 7thSense Design Ltd assumes no responsibility for errors, and/or omissions contained in this information.

Printed: December 2020

This edition is for software version StackSignage 2.0  
Document ref.: M166-2

E: [info@7thsense.one](mailto:info@7thsense.one)  
W: 7thsense.one

7thSense Design Ltd  
2 The Courtyard, Shoreham Road  
Upper Beeding  
Steyning  
West Sussex  
BN44 3TN  
UK

T: +44 (0) 1903 812299

7thSense Design LLC, Michigan  
332 E Lincoln Ave  
Suite 100  
Royal Oak, MI 48067  
USA

T: +1 248 599 2717

7thSense Design LLC, Orlando  
4207 Vineland Rd  
Suite M1  
Orlando, FL 32811  
USA

T: +1 407 505 5200

Introduction	5
Software Agreement	5
Architecture	5
Scheduler Server Requirements	8
DeltaServer: Behind the Scenes	8
Signage Content Components	10
Installation	11
Menus and Navigation	13
Loading Media onto Player Servers	13
Management: Adding Components	15
Display Areas (Screens)	17
Servers and Roles	18
Clients	19
Categories	20
Contracts	21
Layouts	22
Media Assets	24
Transitions	27
Scheduling	28
Templates	30
Daylists	32
Daylist Scheduling (Rules)	35
Calendar	36
Live Schedule	38
Dashboard	39
Reports	41
Template Stats	42
Client Reports	43
Delta Resources	44
Logs	44
Snapshots	45

Media Sync	45
Snapshot	46
For Developers	47
Pre-check Template URL	47
Web Page JS Events	48
Snapshot API	50
System Backup and Switching	53
Document Information	54
<b>Index</b>	<b>55</b>

## Introduction

The StackSignage module provides an advanced content management system and digital signage management solution primed for the unique and stringent needs of large-format digital signage, live event and paid display installations, where timing, content delivery and management, reporting, and alignment to commercial goals are critical.

StackSignage provides a web interface dashboard and control front end to networked Delta Media Servers that deliver the playback and display configuration via the DeltaServer and DeltaGUI applications.

## Software Agreement

### Licence for StackSignage as supplied by 7thSense Design Ltd

The program is provided 'as is' without warranty of any kind, either express or implied, including, but not limited to warranties of merchantability or fitness for a particular purpose. In no event will the author be liable to you for any damages, including incidental or consequential damages, arising out of the use of the program, even if advised of the possibility of such damages.

You acknowledge that you have read this license, understand it and agree to be bound by its terms as the complete and exclusive statement of the agreement between us, superseding any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this license.

## Architecture

### Scheduler PC

StackSignage is managed from a Scheduler PC. This holds the **Scheduler** app, the **Snapshot** app (optional) and a **MySQL database**. It instructs what gets played, where and when, presents a control dashboard, and reports on the playback activity. The primary Scheduler PC can be supported by a backup PC.

The **Snapshot** app allows camera capture at prescribed times as proof of display. The Scheduler software triggers a frame-save command and a frame is saved from the camera to a configurable location.

## Delta Media Servers

These are the servers that carry the **DeltaServer** display configuration and playback software. Once the displays have been configured, this software need not be addressed directly. The StackSignage **Player** app is installed on each of these servers. This listens to the Scheduler, interprets all the commands and assembles the show that the DeltaServer software will play.

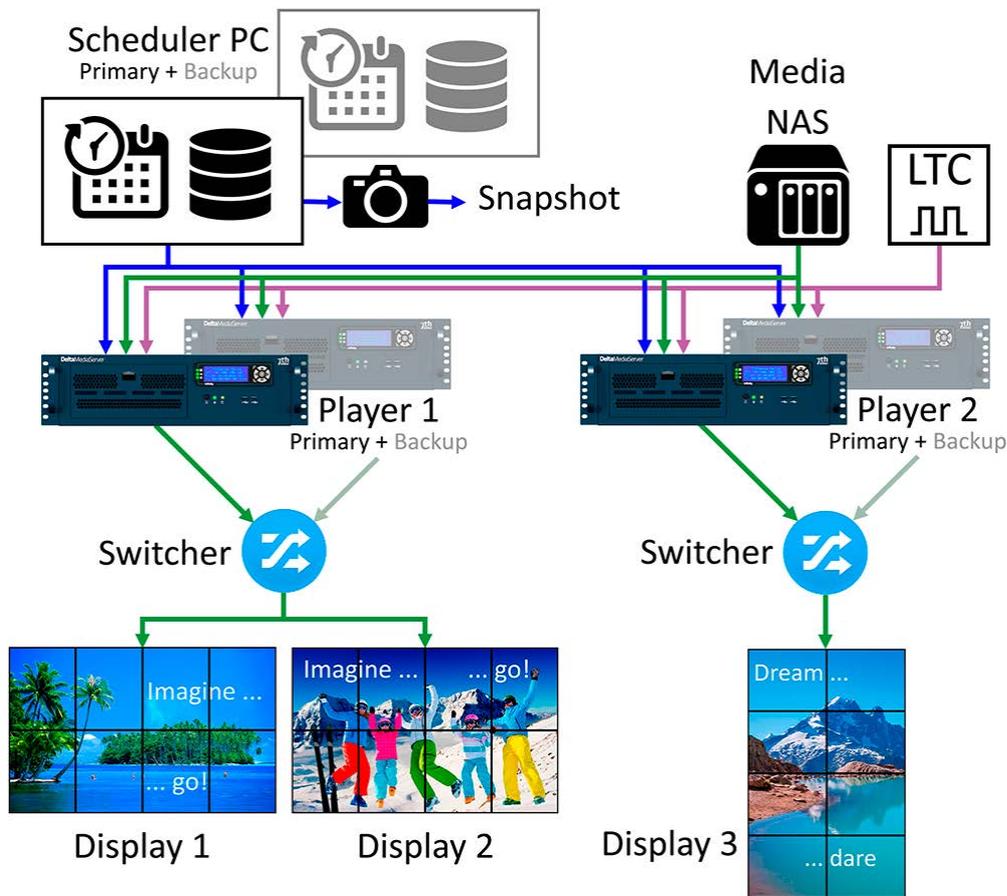
The media servers can also have backup servers in place that can be switched in as a fail-safe.

These servers also hold the display media and the **MediaSync** app. Media can be sourced and distributed, if required, from a Network Attached Storage (NAS) server. **MediaSync** syncs files between configurable sources and destinations for ensuring media are available on any server where they may be needed.

As many servers as required are networked and are preferably genlocked (**LTC** synchronised) via an audio stream.

➤ For more guidance, see [Synchronising Delta Media Systems](#)

In this example system there is a scheduler and two players. Media is uploaded from a NAS, and an LTC source provides synchronisation. There are three displays in a screen group, two linked to the first player, one to the other. The players are each configured to these display dimensions. As a backup, each server has a standby server that can be called into play if needed.



## Primary and Backup Servers

Everything is duplicated here except for the Screens (Displays 1-3). For the closest to a fail-safe operation, all Player servers are running, all populated with the same media resources in mirrored locations. Players have their StackSignage shows configured for their connected display arrangements. Here the video walls are quite different. A single backup Player *could* be used, set up with separate configurations for each display and switchable to either. It needs a little more expertise with the DeltaServer software but only takes a little longer to switch over.

The Scheduler holds the main database, but this could be stored elsewhere and shared between a primary and a backup. The live database is the most volatile element, so today's changes will not be mirrored on your last database backup.

How much fail-safe you build in is up to you. It could be a minimum spare Player and/or Scheduler.

➤ See [System Backup](#) <sup>53</sup>

## Scheduler Server Requirements

---

### Browser Support

The Stack web service aims to provide a modern and powerful web-based interface to the Delta Media Server, using a selection of web technologies to allow advanced user interfaces and real-time feedback. Some of these are not implemented in older web browsers. Whilst Delta Web Service may run without major issues in older browser versions, we do not actively test these versions and do not fix bugs or support issues that appear in them. If in doubt, use an up to date browser and version for the most reliable performance.

### Server Requirements

7thSense web-based applications are tested and designed to run on the full range of Delta Media Servers. The Player servers for StackSignage are 7thSense media servers

Additionally, it is possible to install the Scheduler application onto any PC that meets the following minimum requirements to allow for running on a local control or maintenance PC:

**Operating System:** Windows 7 or Windows 10

**Processor:** Intel i5

**Memory:** 4 GB RAM

**Disk Space (free):** 400 MB

Systems running StackSignage must also meet the system and space requirements of MySQL.

### DeltaServer: Behind the Scenes

StackSignage is a web-based front end that interacts with the 7thSense DeltaServer software running on servers in the role of Player.

DeltaServer, which has its own user interface, DeltaGUI, runs multiple timelines playing media through configurations to any kind of display. Signage applications frequently run to video walls, and in this situation DeltaServer configures the displays for size, resolution, number of channels, bezel correction, and if required in 'Composition Mode' for optimising media resources over distributed display areas.

This much will be covered during installation by the systems integrator, and should require little further intervention unless the display elements are changed.

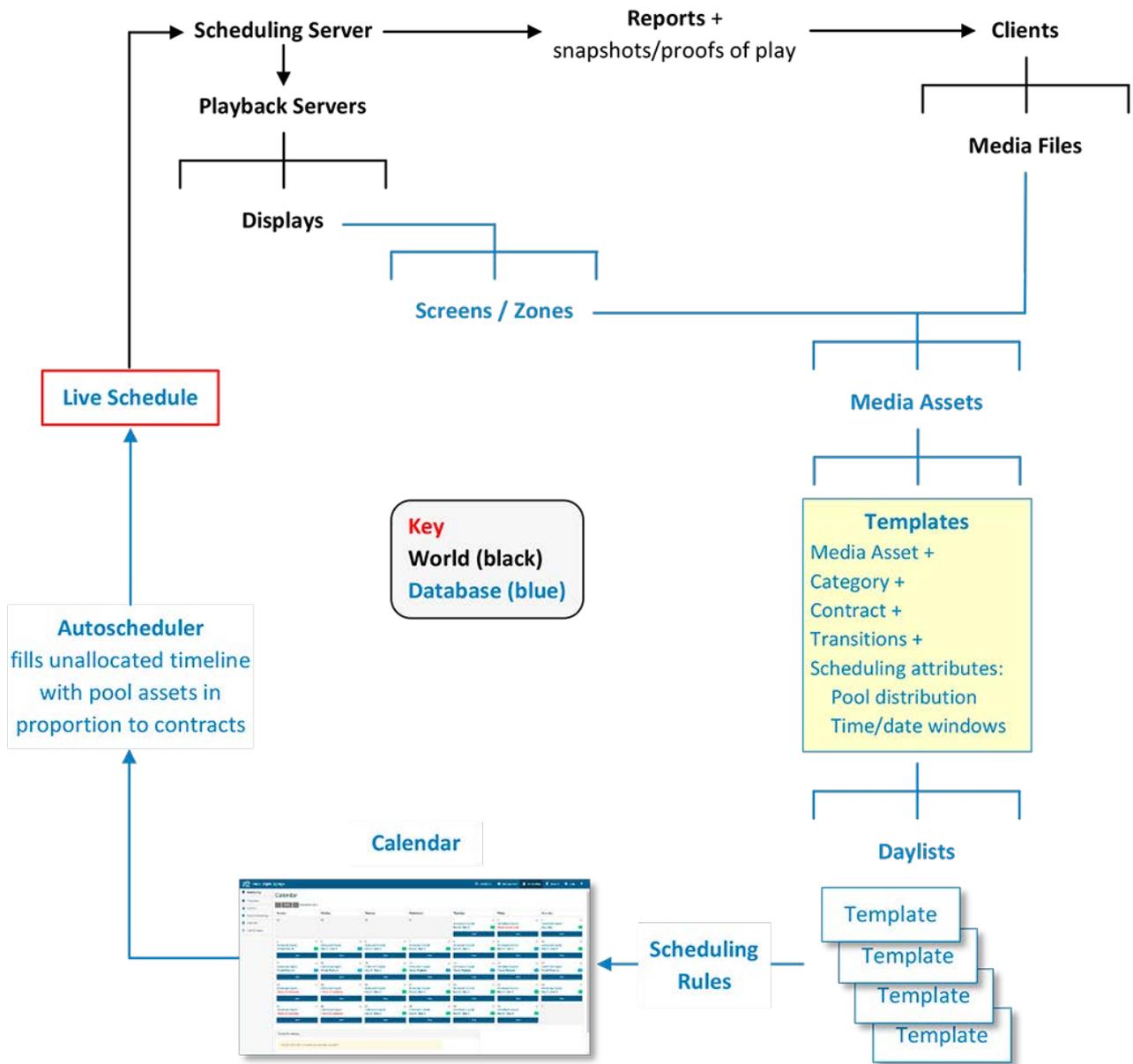
StackSignage interacts directly with DeltaServer, sending instructions on which media resources to use, how and when. These dynamically populate however many timelines have been set up (so that different media can play simultaneously through a number of channels), pulling in effects and transitions between items, according to times. Once set up, you should have little need to know about DeltaServer, but it is worth knowing a few things:

- DeltaServer must be running on each player. It should run automatically when the servers are switched on, and the icon is available always on the Delta Server (Player) desktop.
- When DeltaServer is running, it has a Playback window showing what media is being currently played on Timeline 1, but this is usually running in fullscreen mode, so if you cannot see the Desktop, press the 'F' key to make the Playback windowed.
- When DeltaServer runs, a show file plays by default. The name of this file will be set on installation to be your StackSignage show file. If any changes to display configuration are made they will be in this file, so this file must be re-saved.
- The media framerate must match that of the Delta timeline. If you need to change the framerate to match video media or capture frames, you will need to make some changes using DeltaGUI, the same front-end to DeltaServer used for configuring the display outputs.

## DeltaServer Configuration

The DeltaServer and DeltaGUI software operation, managing media and setting up displays, are all covered in detail in the user guides available on the [7thSense support portal](#).

# Signage Content Components



## Clients

Clients are your customers/advertisers. The system allows you to build a client list with all relevant customer names, attaching their media and building relevant contract details for each. Even if you have a single agency as a client, add them here for personalised reports.

## Contracts (number of plays)

Contracts can be set up with standard details that can be applied to many different clients with their media assets.

*Example:* a contract for '100 plays per day' may be applied to 'Customer A, media 12' and 'Customer B, media 25' where each is contracted to have the same number of plays per day.

## Templates

A Template allows you to map selected media to your displays to meet client and contractual requirements. You also have the option to 'Pool' the Template, allowing it to be scheduled automatically.

## Daylist

The Daylist enables you to create a playlist of media for a whole (or part) of a day. In the Calendar, you apply the daylist to as many days as you wish. Any gaps in the Daylist may be filled manually, or automatically scheduled by the system.

## Dashboard

The dashboard shows a summarized view of each of the servers and their current status. Buttons allow you to:

- re-sync servers if there has been a break in service
- view a log of the server's events
- refresh the list of media assets when these are added to or removed from the server
- start and stop the service.

## Installation

- The MySQL **database**, the **Scheduler** app, and the **Snapshot** app are installed on the Scheduler server PC. MySQL must be installed first.
- The **Player** app, and **MediaSync** app are installed on each 7thSense media server.

The program location on all servers is C:\7thSense\web\data\app.

It is assumed from here on that all required components of the StackSignage system are physically installed and connected.

Switch all units on and run all the software.

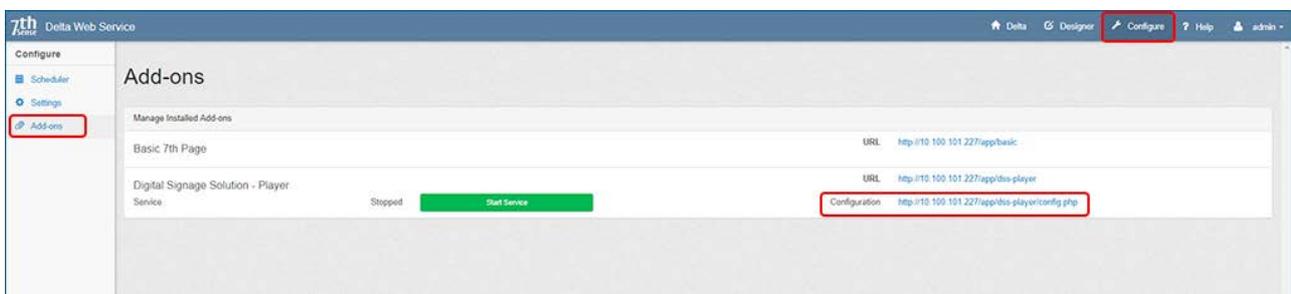
- StackSignage apps are started as services in the browser from end as illustrated below.
- Players may be set to run DeltaServer initially with a fullscreen playback window. If the screen is all black instead of the Desktop, exit fullscreen mode by pressing the F key.

## Starting the Players and Synchronising with LTC

The Scheduler PC talks over the network to the Players, so use the web service now to run the Player app on each, and check that the synchronising timecode chase is turned on.

**On the Scheduler PC**, type the IP address of the **Player** into a browser tab. This will offer the login page, so use the default username and password of admin/admin.

Click the top-right Configure button, then Add-ons at the bottom of the left menu bar. Find the Signage - Player app and click its Configuration link:



Make sure the Play Mode is 'Timecode Chase' and save any changes:



Start the Player service; the button will turn red, and read 'Stop Service':

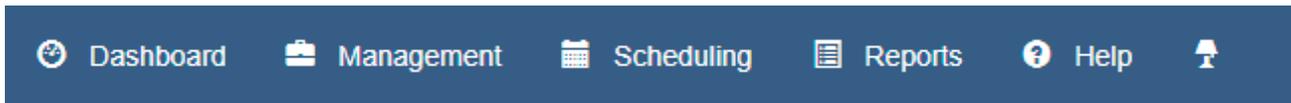


Repeat this for all Players.

## Menus and Navigation

### Navigating the StackSignage Scheduler

At the top you will find the main menu. These choices bring up local menus on the left side.



#### Dashboard

This is your view of all the StackSignage networked Servers, for status and control. [More...](#) <sup>39</sup>

#### Management

This provides the Management menu options for assembling all the component parts for playing content. [More...](#) <sup>15</sup>

#### Scheduling

Here you bring together client requirements with media resources to determine what is played, when or how often, and where, avoiding any blank screens and gaps. [More...](#) <sup>28</sup>

#### Reports

List media availability and records of played schedules for clients and for management. [More...](#) <sup>41</sup>

#### Help

View this user guide.

#### Lighting

Choose between bright and dark screen pages for the StackSignage Scheduler app.

Depending on the page requirements, you will find list tools including filters and bulk actions for selected items (top of page, left), and local toolbars (top of page, right). These are described in the respective sections below.

## Loading Media onto Player Servers

The Delta Media Servers (the Players) play media that is stored on them as instructed by the StackSignage module. Therefore everything required to be played must reside on the Players that will feed the required displays. Use well-structured and named folders for easy access and good

management. The available Movies will be listed by their filename if codec files, or 'base name' (i.e. prefix to the frame number) if frame-based files.

## Workflow

- Distribute media to all **Servers**.
- Refresh the **Resource** pool available to the DeltaServer software in the StackSignage database.
- Select media resources to assemble **Media Assets** that are assigned to **Screens**.
- Profile **Media Asset** usage in **Templates**.
- Add **Templates** to **Schedules** automatically or manually.

For folder locations by media type, and for preferred media formats, see the online Workflow Guide:

➤ [Delta Workflow Guide](#)

If you are using a NAS, see also:

➤ [Using Networked Movie Storage](#)

These available resources will be fully described as 'Media Assets' in the Scheduler application.

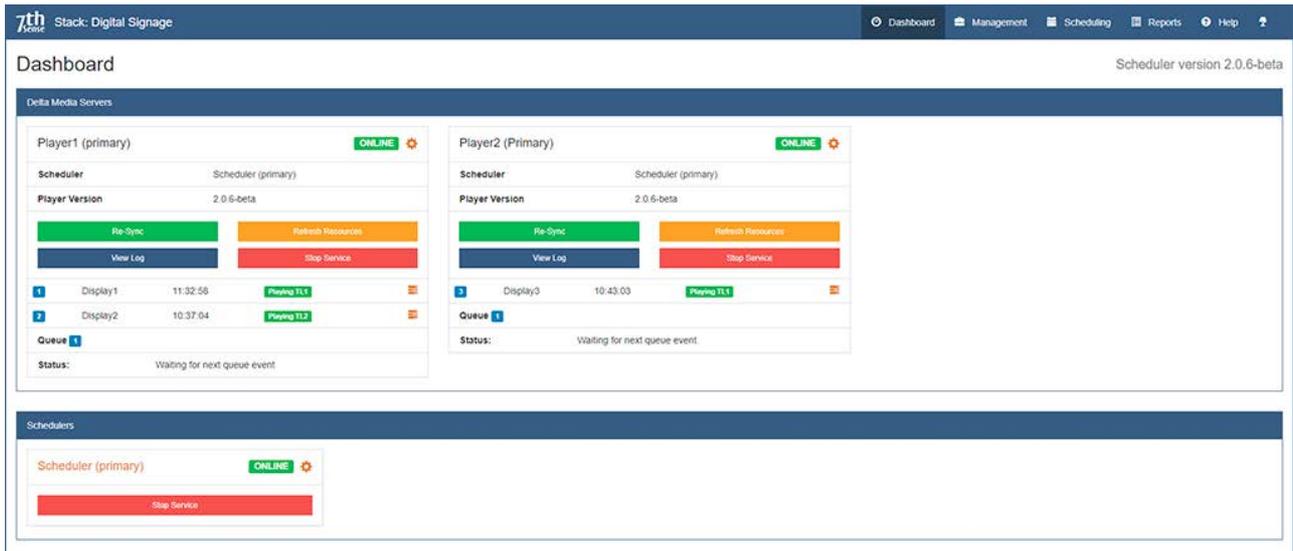
## MediaSync

This app, mounted on each Player server, ensures that media stored on a NAS is copied down when the Dashboard 'ReSync' button is pressed.

## Refreshing Media Lists

**Note:** you will not see this on your Dashboard until after the initial set-up of both [Servers](#)<sup>18</sup> and [Screens](#)<sup>17</sup>.

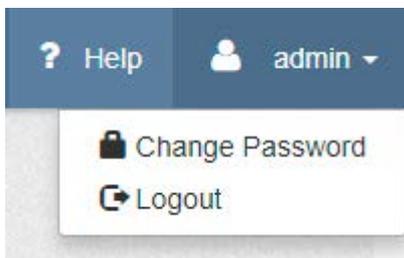
The DeltaServer software requires its internal lists of media to be refreshed whenever media are added or removed. To do this, press 'Refresh Resources' in Dashboard for each Player server.



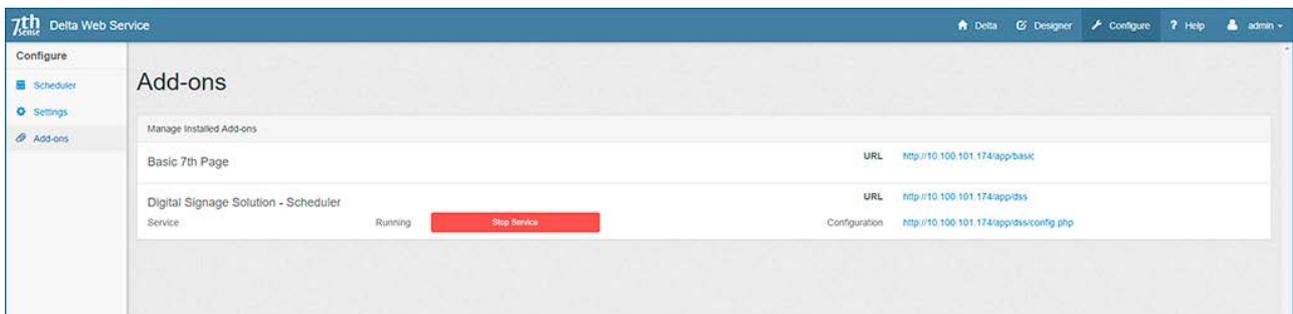
## Management: Adding Components

On the Scheduler PC, open a browser tab and type in the IP address of the Scheduler. This will offer the login page, so use the default username and password of admin/admin.

- You can set up your own username and password under Admin:



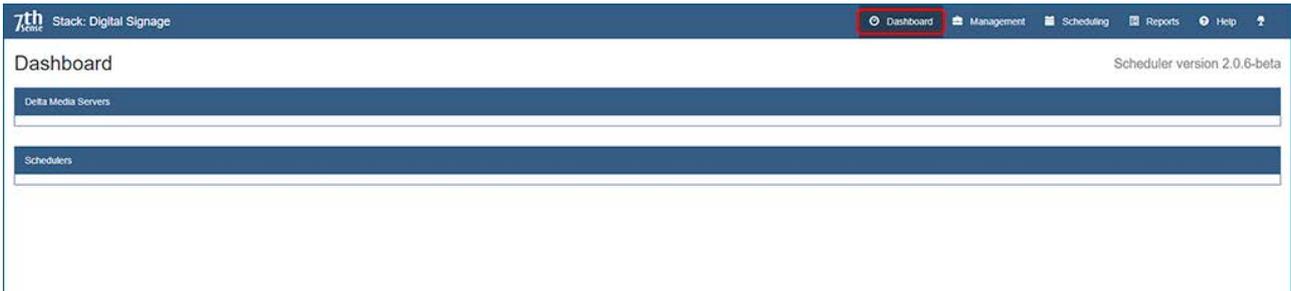
Go to Add-ons at the bottom of the left-side menu bar, find Signage Scheduler and click 'Start Service'. The Scheduler will now show 'Running' and the button will go red and read 'Stop Service':



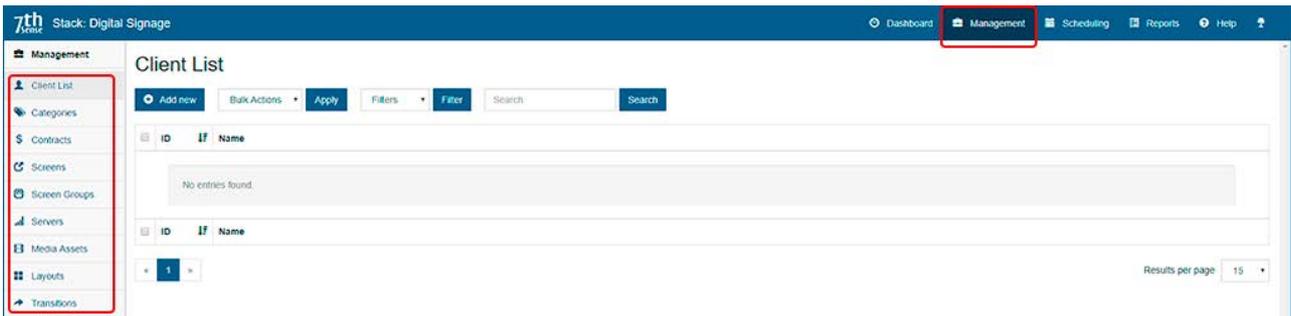
## StackSignage Dashboard

The Dashboard is accessed via web browser on the Scheduler IP address, port 8080 (e.g. 10.100.101.123:8080).

Nothing will be listed yet, until the Servers and Screens have been added, which we will do next:

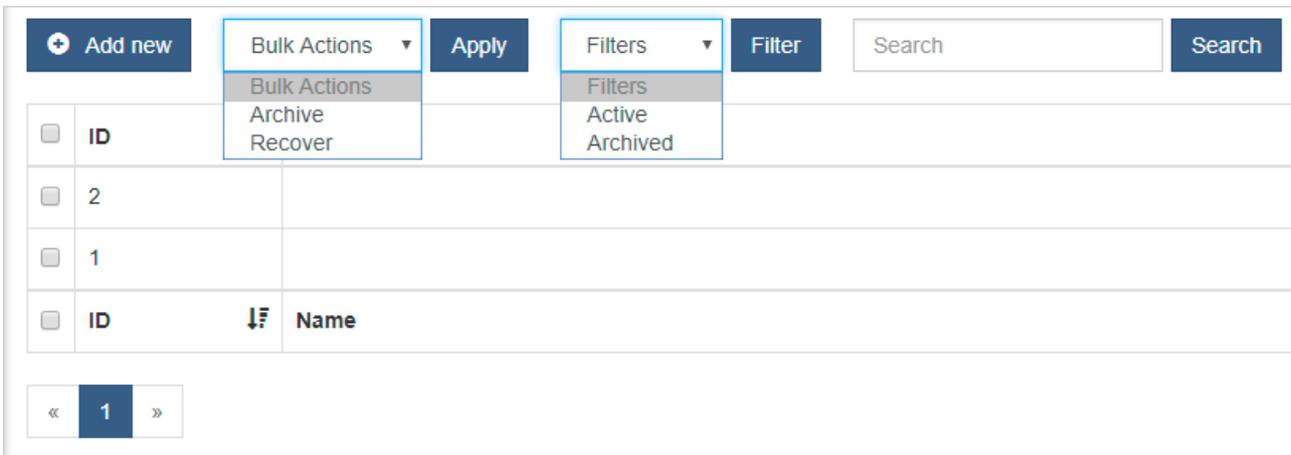


Here also, all the components for creating Schedules are created and managed:



## Adding, Editing, Removing Items

At the top of every component page under Management, is a common control bar:



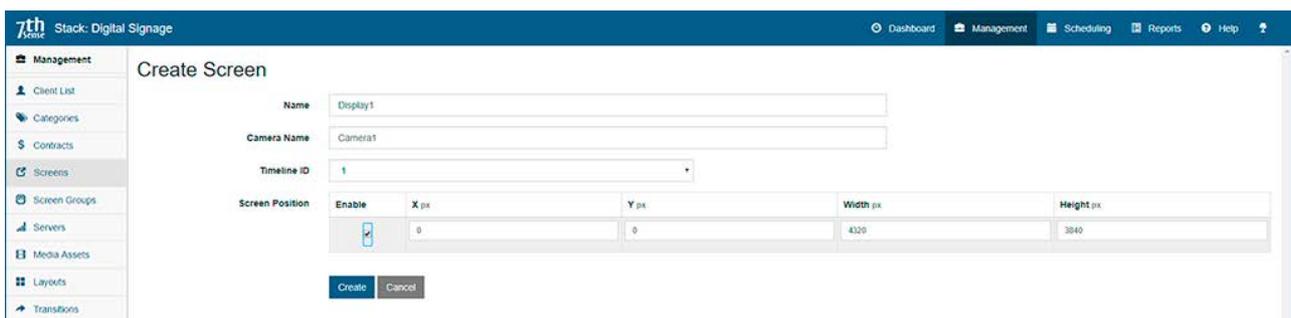
- Add an item with 'Add New'.
- Edit an item by clicking its name, make changes, and Save.
- ID numbers are auto-allocated when an item is created, but you can sort lists by newest or oldest first.
- Click the header ID checkbox to select all items listed, or click single items to select them.
- Bulk actions are 'Archive' and 'Recover'. There is no absolute 'Delete'.
- An archived item can be recovered by filtering to view 'Archived' rather than 'Active' list items, then select.
- Search searches the Name field only.

## Display Areas (Screens)

Screens are where the media will play. A screen can be a defined area within a video wall, or the whole of it.

**Screens** are fed by the player media **Servers** and are attached to **Media Assets** to define where they play.

Let's say we have three display walls as in the architecture illustration used [here](#)<sup>5</sup>. Each display is called a Screen in StackSignage, so let's add them. Click on 'Add New' and create Display1 to run from server timeline 1 (different displays can run from separate timelines simultaneously).



- If the media fits the display dimensions, the X-Y coordinates of the top-left corner will be 0,0, and the width and height of the pixel measurements for this display area.
- If the media over multiple screens and, for example, this screen is to display only one quadrant of a piece of media, then you will need the media coordinates for the start point within the media, and the pixel width and height of the area of the media to show on this screen.

Here we have also added an optional proof-of-show camera to take time-stamped snapshots.

Check to enable the screen and click the 'Create' button.

When all screens have been added in this way, you can see them listed, filter, sort and manage them:

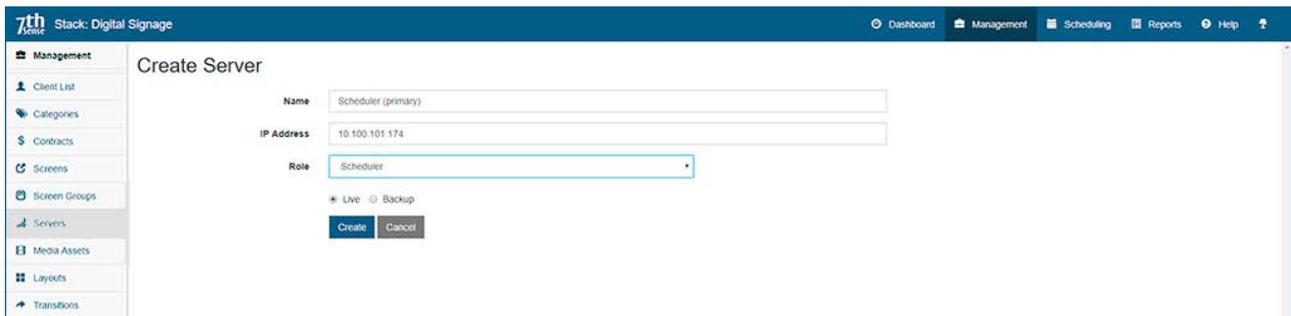


## Servers and Roles

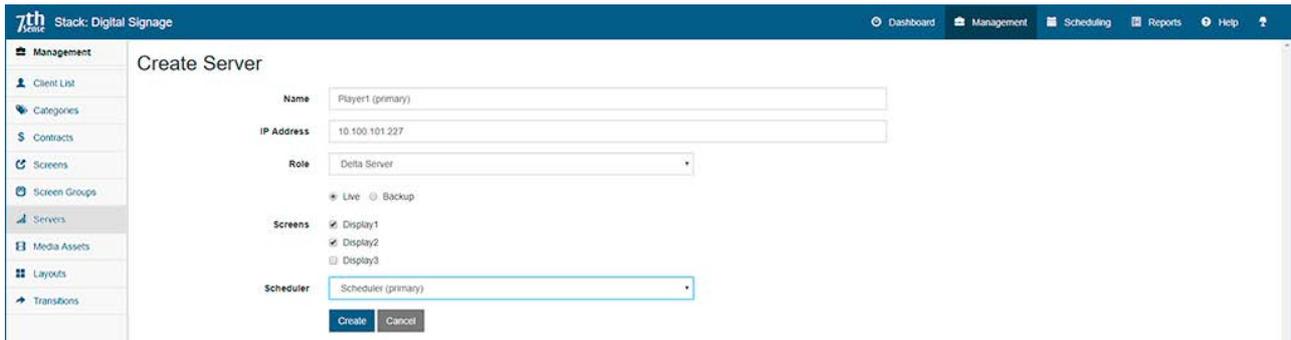
Servers are the PCs that comprise the StackSignage system.

**Servers** can have one of two **roles**: Scheduler (conducts the 'orchestra') and Player. The **status** of 'live' or 'backup' assigned is for the purposes of logging and client reporting/billing. If the *use* changes (a backup is being used as a primary), then the *status* must be changed manually here.

Each server (Scheduler and Players) needs to be added, and for the Players, respective screens must be linked. Name your servers for easy identification, add their IP address, select the role, and whether live (primary) or backup:

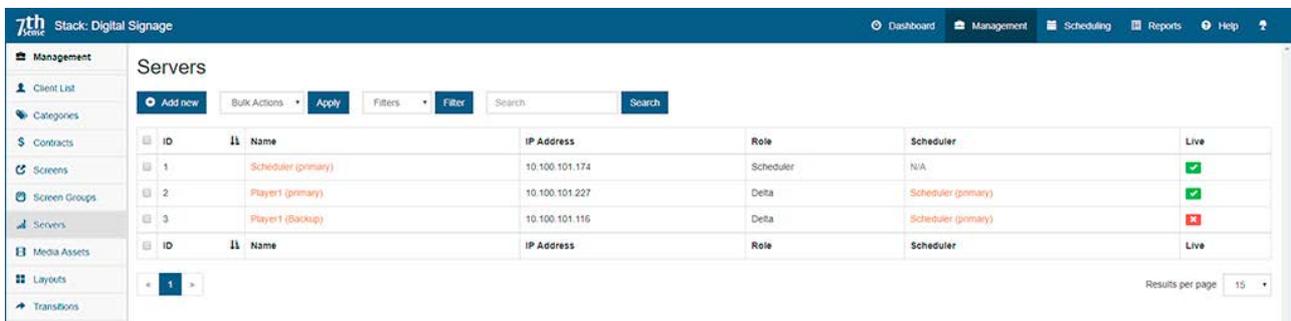


Player servers are also linked to their displays, and to which scheduler server they will listen:



The third role that server can play is that of a NAS. These just require a name and IP address, and whether live or backup.

As with the displays, servers are listed, can be sorted, filtered and managed:



**Note** the red cross against a backup Player. This simply reflects that its current status is not Live, not that it is not online or running.

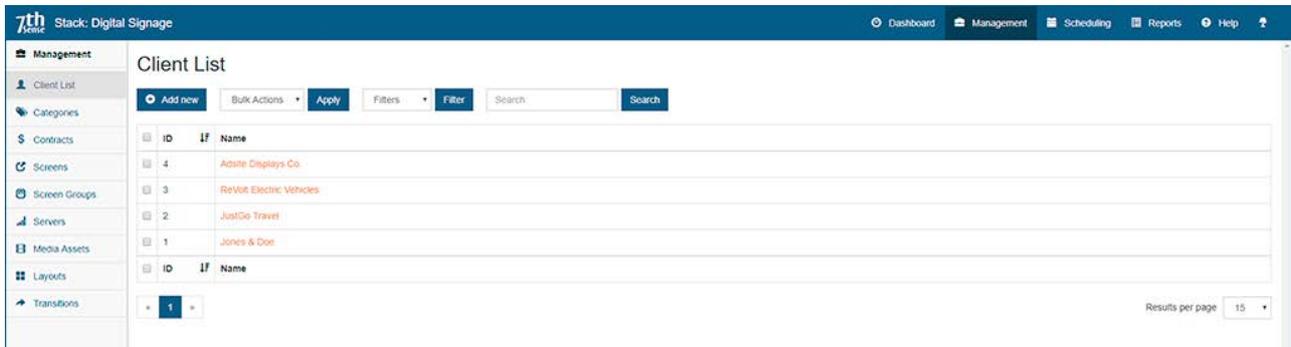
## Clients

**Clients** will have schedule **Templates** and **Contracts** associated with them. Their **Media Assets** are linked via the **Templates**.

Click 'Add New' to add your first client, and click 'Create':



Click 'Add New' to add more. As with other components of StackSignage you can control the selection, order, and list view:



You might want to add yourself as a dummy client (here, 'AdSite Displays Co. '), so that you can relate filler media to it. These are useful for uneven time-slot matching, and explained under [Media Assets](#)<sup>(24)</sup>. By assigning fillers to a Client makes reporting of these events easier to see.

## Categories

Categories avoid media of the same category from being sequential, in order to distinguish them better.

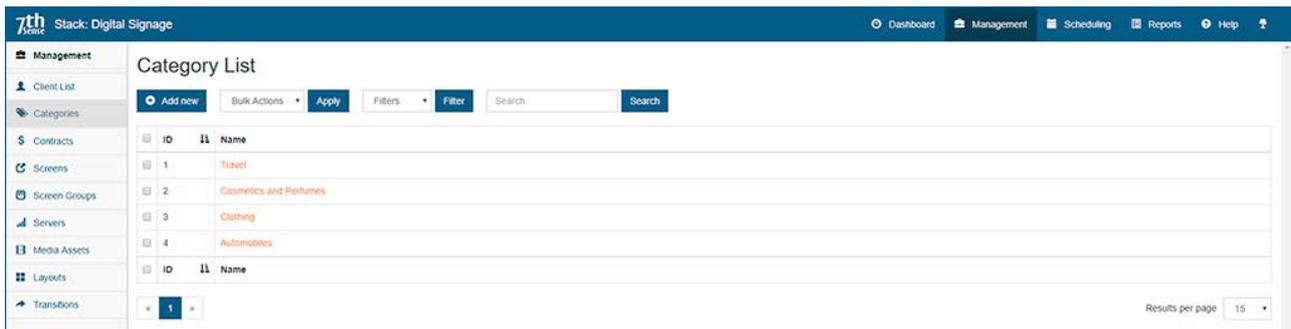
**Categories** are used by **Media Assets** and schedule **Templates**.

Examples: Travel, Cosmetics, Clothing, Automobiles.

Click 'Add New' to add your first category, and click 'Create':



Click 'Add New' to add more. As with other components of StackSignage you can control the selection, order, and list view:



## Contracts

Contracts are play profiles that control how many times a piece of media has been asked to be played. Give meaningful names, for example if a particular time slot or display location might be required. Plays per day are actually normalised across the day for what is possible accounting for all demands. Think of a Contract as a weighting value.

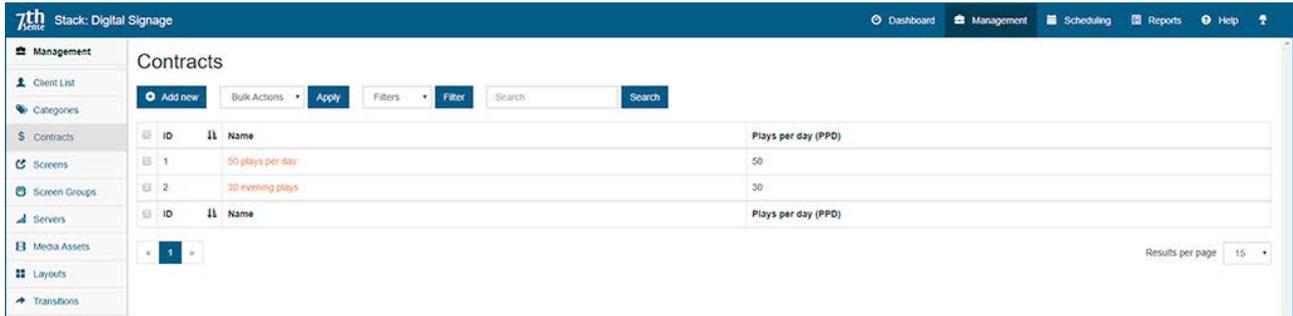
Contracts are generic, and can be used by any Client or Media Asset in any Template.

**Contracts** are used by schedule **Templates**. If you *only* schedule a Template manually, there is nothing to alert you to falling below or exceeding a Contract. If you use up part of a Contract in manual placements, autoscheduling will take account of this in allocating additional plays.

Click 'Add New' to add your first contract, and click 'Create':



Click 'Add New' to add more. As with other components of StackSignage you can control the selection, order, and list view:

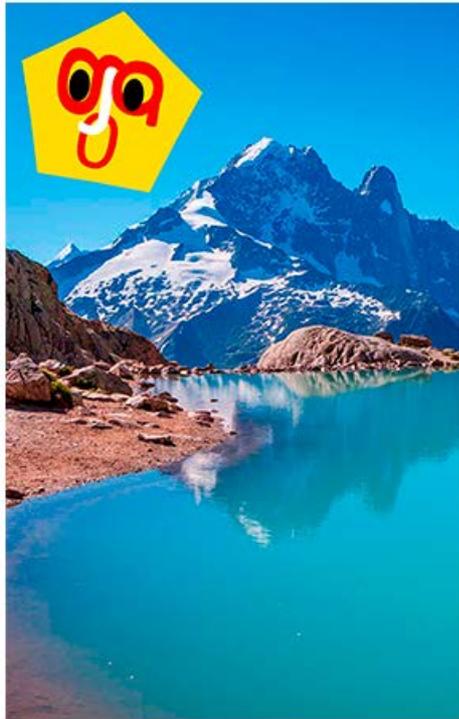


## Layouts

Any display can show more than a single full-screen image or movie. The DeltaServer timeline that runs the media schedule on the screens is layered, with images on lower-numbered layers opaque to those beneath. For example, a smaller inserted logo or animation can play over a full-screen movie or image, in any position you want.

**Layouts** are used by schedule **Templates**.

The layout is described as a combination of zones. In this example, two zones have been defined in a layout:

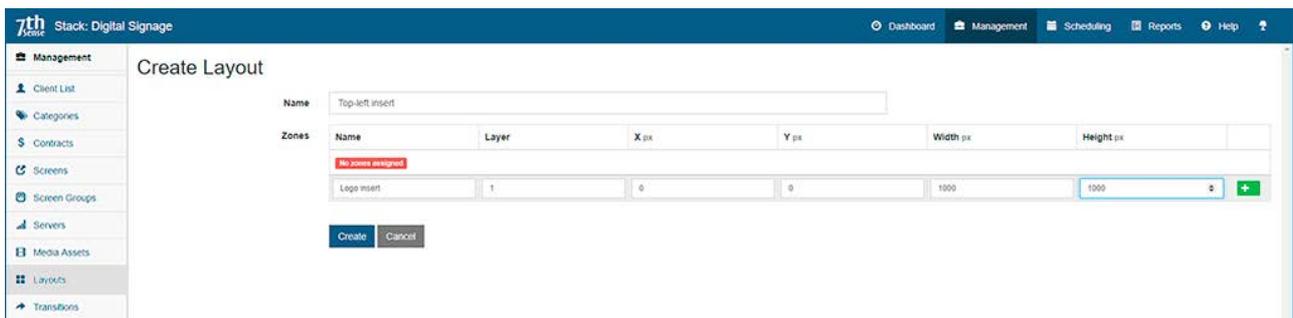


**JustGo logo is in Zone 1:**  
 Layer =1  
 X,Y position is 0,0  
 Width and height define size



**Background movie is in Zone 2:**  
 Layer = 2  
 X,Y position is 0,0  
 Width and height are full screen dimensions

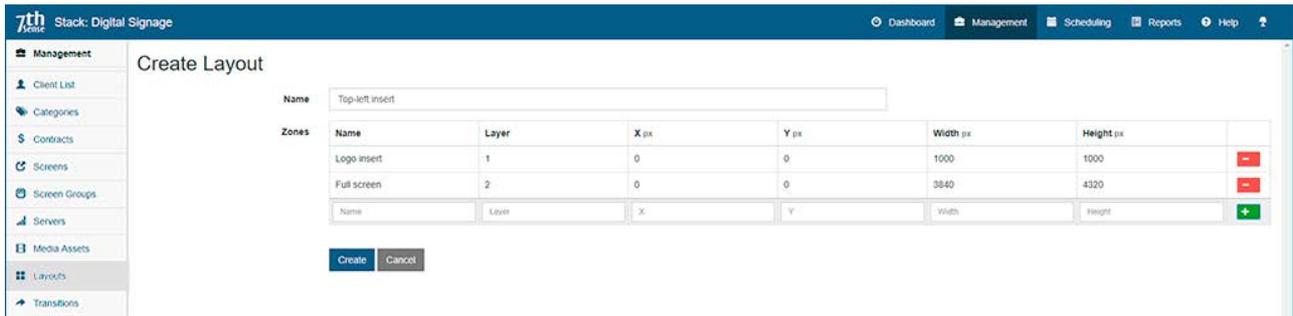
Click 'Add New' to add your first layout. First define the zones you want. Here we are adding a zone for a logo top-left in an area 1000 px square:



Save this zone by clicking the green cross button.

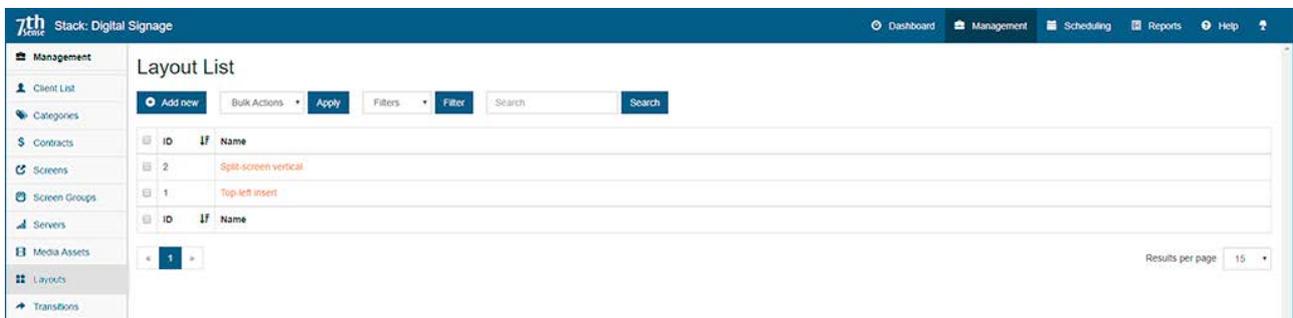
Define another zone, and again click the green cross button to save it.

Here we have added a full-screen zone for the background, underneath the logo, in layer 2, so we have two zones in this layout:



Now click 'Create' to save the Layout itself. Click 'Add New' to add more layouts, for example one that splits the screen vertically into two full-height half-width zones.

Layouts are listed and managed as all other components of StackSignage:



## Media Assets

A media asset is an instruction to play a stored media resource on a display or displays for a certain time, with an optional start and stop control string.

**Media Assets** are called by schedule **Templates**.

Here, our client JustGo Travel has supplied a 30-second movie with the base filename 'Mountains-and-Snow\_', which we will show on Display 1.

The screenshot shows the 'Create Media Asset' form in the 7thSense Stack: Digital Signage interface. The form is titled 'Create Media Asset' and is located in the 'Management' section. The form includes the following fields and options:

- Name:** A text input field containing 'JustGo Winter Specials'.
- Available Screens:** A list of checkboxes for 'Display1', 'Display2', and 'Display3'. 'Display1' is checked.
- Length (s):** A text input field containing '30'.
- Type:** A radio button selection for 'Movie', 'Image', 'Live Capture', and 'Web Page'. 'Movie' is selected.
- Movie Resource:** A text input field containing 'Mountains-and-Snow\_'.
- Search Movies:** A dropdown menu showing 'Mountains-and-Snow\_'. Below it, a note says 'Enter % for all'.
- Audio Match:** A checkbox for 'Enable'. Below it, a note says 'This will match audio to this movie based on its file prefix. For more information on the naming requirements please view the help section.'
- UDP Output on Start:** A table with columns 'Enable', 'IP Address', 'Port', 'Offset', and 'Command'. The 'Enable' checkbox is checked. The IP Address is '127.0.0.1', Port is '7780', Offset is '0', and Command is 'FLVOD'.
- UDP Output on Finish:** A table with columns 'Enable', 'IP Address', 'Port', 'Offset', and 'Command'. The 'Enable' checkbox is checked. The IP Address is '127.0.0.1', Port is '7780', Offset is '0', and Command is 'FLVOD'.

At the bottom of the form, there are 'Create' and 'Cancel' buttons.

## Name

Type a meaningful name that you will use in scheduling. This might include a company and/or a campaign name. A good resource and Media Asset naming discipline will save a lot of potential confusion later.

## Available screens

These are the display areas you have previously set up. If a resource will be played on more than one screen, select all screens to which it will be available.

## Length (in seconds)

Whatever the length of the actual media resource, this determines the playing duration of this Media Asset.

Movies will loop back to their start if allocated more time than their length. A movie with slightly more frames than exact seconds (e.g. 958 frames at 30 fps) can only be shown in full seconds duration and in multiples of 5 seconds (in this example, 30 seconds) so would be cut slightly short.

Other media have no time definition, so play time is defined here. A message may need to be displayed at some times for 5 seconds, and at other times for 10, so two media assets would be created, suitably named.

## Type

Select the type of media. This also determines the search list contents below.

## Movie Resource

You *can* type the resource filename exactly, here, but it is better populated by selecting from the search box. Note that movie frame sequences end with an underscore character.

## Search Movies

Start typing the name you know, or type % for the complete list available. This list is an accumulated de-duplicated list of media resources, by media type, drawn from all the resource folders on all Players.

**Note** that these are the names of the frame sequences available, not of the folders containing them.

## Audio Match

Separate audio files will be detected as matched to a frame-based (e.g. 7TH, STH, or .tga) movie if they share the same filename stem.

## UDP Output on Start / UDP Output on Finish

The start and end of a template can be used to send UDP commands to external devices.

We have now listed the media that our Clients have supplied, and tied them to which Screens they can be shown on:

ID	Name	Available Screens	Length	Media
16	Filter Display 3	Display2	5	Image: ocean waves
15	Filter Display 2	Display2	5	Image: woodland leaves
14	Filter Display 1	Display1	5	Image: woodland leaves
13	RV-Vanlastic	Display1 Display2	30	Movie: Vanlastic
12	RV-Leading Charge	Display1 Display2	30	Movie: Leading the Charge
11	RV-Go Anywhere	Display1	30	Movie: Go Anywhere
10	JustGo-Mountains	Display2	30	Movie: Mountains and Snow
9	JustGo-Short Breaks	Display1 Display2	30	Movie: Short Breaks
8	JD-Shoes	Display2	30	Movie: Seasonal Shoes
7	JD-Glamour Eyes	Display2	30	Movie: Glamour Eyes
6	JD-Eco Fashion	Display2	30	Movie: Eco-fashion Collection
5	JustGo-Dolomites	Display1 Display2	30	Movie: Dolomites Bergains
4	JustGo-Cross Country	Display1 Display2	30	Movie: Cross-Country Ski
3	JD-Common Scents	Display2	30	Movie: Common Scents
2	JD-City Slickers	Display2	30	Movie: City Slickers

We can now use **Templates** to bring Media Assets, Clients, Categories, Contracts and Screen Layouts together.

## Different Media Lengths and Avoiding Blank Screens

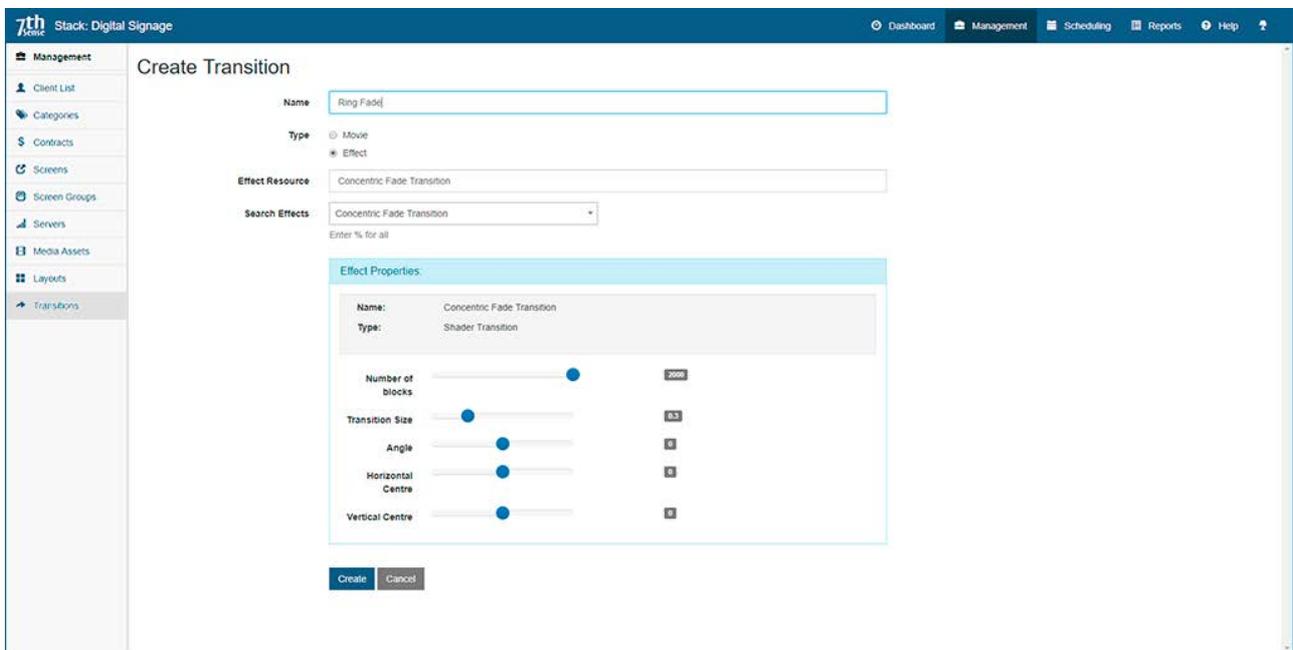
Media Assets are played for Clients, but due to scheduling and availability of each Screen, short gaps could occur between templates on any screen. To avoid this, create minimum-length Templates for each Screen, assigned as Pool Templates for autoscheduling, and available on all Players. These assets may be regular announcements, graphic images or neutral movie scenes where duration does not matter.

# Transitions

Transitions are optional. They are what you want to happen between scheduled items. A schedule Template can have a transition in or out, or both, and Templates can overlap. For example, merging with a fade, to transparency, or with a ripple effect. These effects are stored on the player media server. Alternatively a neutral movie resource (not asset) can be used.

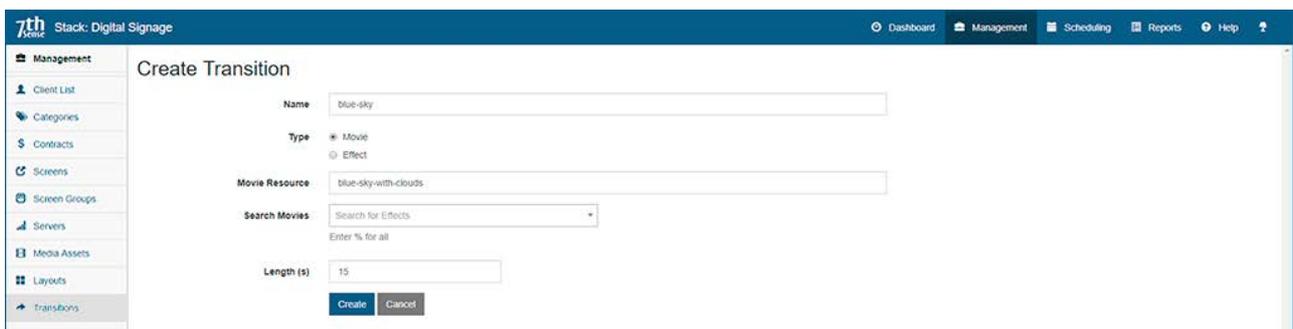
**Transitions** are used by schedule **Templates**.

Click 'Add New' to add a transition, name it and select an effects resource to use. The selected effect file will then offer up its relevant properties:



Click 'Create' to save it, and 'Add New' to create any others you want to make available for use.

If a movie is used for transition, there are no properties, but a time duration in multiples of 15 seconds is needed:



## Scheduling

Select Scheduling from the top right menu to start creating what will become your live schedule. The timeline shows all the screens you have set up earlier with the servers. The Templates determine which Screens are used by each Media Asset.

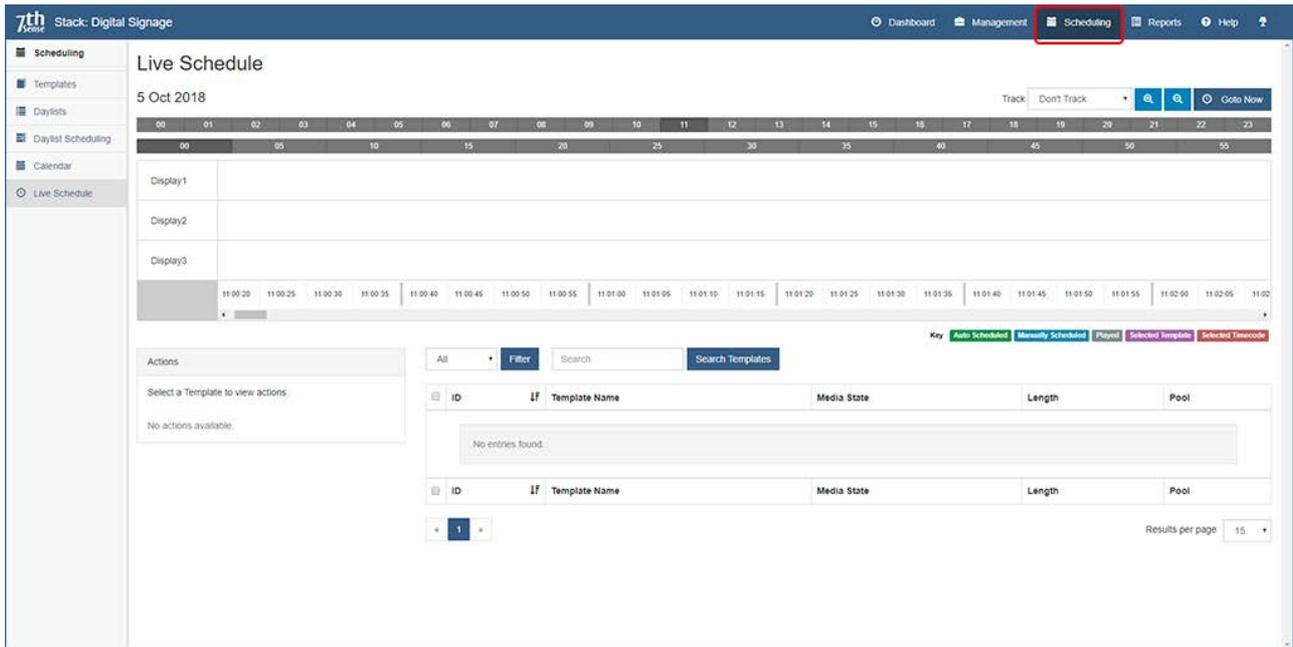
Scheduling uses **Templates** as its building blocks, and can take into account **Contracts** and **Categories** to distribute items through all available time slots in the **Live Schedule**.

There are two modes of scheduling: manual and automatic, normally used in combination:

- **Manual scheduling** means a Template is placed in a specific timeslot, and in as many places as required. It is up to you not to exceed any Contract. If the Template is Pooled, autoscheduling will use the remaining Contract when filling all the unallocated gaps in a day. *Example:* A Contract is for 10 plays, three manual placements are made and the autoscheduler reads the contract as 7 additional plays.
- **Automatic scheduling** selects Templates assigned as Pooled, and uses contractual weighting to distribute them proportionately within any time restrictions assigned in the Templates, around manually-scheduled Templates. If there are no Daylists and no manually scheduled Templates, the whole timeline will be filled by the autoscheduler.

To begin with you will see only the structure of an empty schedule (below), until the elements have been populated:

- **Templates** to associate Clients, Categories, Displays, Contracts and date/time play windows
- **Daylists** that are regular playlists to allocate to one or more days of the week, parts of days or specific dates.
- **Daylist Schedules** that create the rules for when each Daylist will play; any gaps in the Daylist may be filled manually or automatically scheduled by the system.
- the **Calendar**, which shows the scheduled Daylists and enables other Daylists to be manually scheduled in.



## Timeline Navigation

The upper grey bar represents hours, the lower, minutes. Click on the hour you want to locate, then the minutes, to bring that section of the timeline into view.

The scroll bar under the list of Screens allows you to track within the selected hour.

## The Schedule Toolbar



### Track

'Don't Track' allows the current time cursor to move left to right and off the view, but allows you to scroll anywhere to manually schedule or remove Templates. Players are listed so you can choose to view and track particular players, which keeps the current time in centre view.

### Zoom In / Out

Zooming allows you to contract or expand the timeline view.

### Goto Now

This brings the current time and playhead cursor into centre view.

## Templates

**Templates** are the building blocks of the play Schedule.

- A Template should have a meaningful **name**, reflecting its purpose and/or to what it belongs (e.g. a campaign, or a client).
- The **Client** is named so that templates can be filtered and reported on by Client.
- The Template is assigned a **Category**, so that adjacent Templates of the same Category can be avoided in automatic scheduling.
- Media Assets are mapped to **Screens**. Remember, a Screen might be a whole video wall, or just an area in one, and that in a Screen, Zones are created within a **Layout** that can play different media resources simultaneously.
- **Transitions** and overlaps blend one Template into the next. Both are optional.
- A **Contract** determines the proportion of total plays in a day when autoscheduling.
- A Template assigned '**Pool**' status will be automatically scheduled and distributed within its date /time restrictions, according to Contract and Category. A Template taken out of the Pool can only be scheduled manually.

The screenshot shows the 'Create Template' form in the 7thSense Stack Digital Signage interface. The form is titled 'Create Template' and is located in the 'Scheduling' section. The form includes the following fields and options:

- Name:** JustGo Mountains
- Client:** JustGo Travel (with a 'Create New' link)
- Category:** Travel (with a 'Create New' link)
- Mappings:**
  - Displays:** Media Asset (JustGo-Mountains (30)), In Transition (empty), Out Transition (Blue Sky (movie))
  - Overlap Previous Template:**
  - Overlap Next Template:**
  - Display 1:** + Add Screen (green button)
- Contract (per hour):** 50 plays per day (1 mins) (with a 'Create New' link)
- Pool Template:**  Make available for automatic scheduling
- Pre-check URL:** (empty field)
- Proof of play every:** 5 plays
- Date Range:**  Enable, 10 Oct 2018 to 09 Nov 2018
- Time Range:**  Enable, 16:45 to 21:45
- Buttons:** Save, Cancel

## Mapping Media Assets

Start by adding selecting a Screen from the list and clicking the green 'Add' button. (Screens can be deleted with the Red 'minus' button.)

If one Media Asset fills this Screen, select the 'Media Asset' radio button. If Media Assets will play simultaneously in separate Zones *within* a Screen, select 'Layout'.

Select the required Media Asset from the drop-down list, or in the case of a Layout, for each Zone listed for the Layout. Remember, if these are layered well, an unpopulated Zone will simply be filled by any larger Zone underneath.

If desired, enable Transitions you have set up for the beginning or end of the Template *for each Screen included*. Movie Transitions have a duration of their own; effects and images need you to define how long they take.

Overlapping a preceding or following Template with a Transition means the transition duration will be shared across the end of one Template and the start of another. Choose your strategy: always to overlap the start of following templates *or* always preceding templates: do not mix them. If no overlap is selected, the transition is enacted within the scope of the Media Asset.

## Using automated scheduling?

Add a **Contract**: this will provide the required weighting if this template is pooled for automatic scheduling.

Click to tick the **Pool Template** option if you want to make the media available for automated scheduling. *Fields below this choice apply only to pooled templates.*

The **Recheck URL** option allows for you to add a link to your own php script to check for conditions of playback. For example, the clip will only be played if it is raining (weather report link). For more information on this functionality see [Pre-check Template URL](#)<sup>47</sup>.

**Proof of Play** allows you to select how many times the clip will be played before a snapshot is taken. In this example, a snapshot will be taken every 5 plays of the clip.

**Date and Time ranges** define when the templates will show in your template listings. Templates remain on the system, so can be reinstated and/or edited for use at a later date if required.

Click the 'Save' button to save your Template. This will return you to the Templates list, showing the template that you have created:

ID	IF	Name	Client	Contract	Screen Mappings	Length	Created	Pool
16		JD Urban Campaign	Jones & Doe	Hourly	Display1: JD City Stickers	30	10/10/2018	<input checked="" type="checkbox"/>
15		JD Cosmetics	Jones & Doe	50 plays per day	Display1: JD Glamour Eyes	30	10/10/2018	<input checked="" type="checkbox"/>
14		ReVolt Commercial Vehicles	ReVolt Electric Vehicles	Hourly	Display1: RV Verticals Display2: RV Horizontal	30	10/10/2018	<input checked="" type="checkbox"/>
13		ReVolt Main Campaign	ReVolt Electric Vehicles	30 evening plays	Display1: RV Leading Charge Display2: RV Leading Charge	30	10/10/2018	<input checked="" type="checkbox"/>
12		JD Eco Fashion	Jones & Doe	50 plays per day	Display1: JD Eco Fashion	30	10/10/2018	<input checked="" type="checkbox"/>
11		JD Perfumes	Jones & Doe	50 plays per day	Display1: JD Cosmetics Scenters	30	10/10/2018	<input checked="" type="checkbox"/>
10		JustGo Short Breaks	JustGo Travel	50 plays per day	Display1: JustGo Short Breaks	30	10/10/2018	<input checked="" type="checkbox"/>
9		JustGo Dolomites 2	JustGo Travel	30 evening plays	Display1: JustGo Dolomites	30	10/10/2018	<input checked="" type="checkbox"/>
8		JustGo Dolomites	JustGo Travel	30 evening plays	Display1: JustGo Dolomites	30	10/10/2018	<input checked="" type="checkbox"/>
7		JustGo Cross-Country	JustGo Travel	Hourly	Display1: JustGo Cross Country	30	10/10/2018	<input checked="" type="checkbox"/>
6		JustGo Cities	JustGo Travel	30 evening plays	Display1: JustGo Alpine Cities	30	10/10/2018	<input checked="" type="checkbox"/>
5		JustGo Mountains	JustGo Travel	50 plays per day	Display1: JustGo Mountains	30	10/10/2018	<input checked="" type="checkbox"/>
4		JustGo Alpine Cities	JustGo Travel	30 evening plays	Display1: JustGo Alpine Cities	30	10/10/2018	<input checked="" type="checkbox"/>
3		Filler Display 3	Adrite Displays Co.	None	Display1: Filler Display 3	5	10/10/2018	<input checked="" type="checkbox"/>
2		Filler Display 2	Adrite Displays Co.	None	Display1: Filler Display 2	5	10/10/2018	<input checked="" type="checkbox"/>

Note now, that the Filter at the top allows you to separate the pooled and non-pooled templates. Non-pooled templates may simply be forward prepared, to be made pooled when you want them to be autoscheduled, or be manually scheduled at set times as required.

## Managing Templates

Once created, Templates can be edited and saved. If they represent a pattern regularly required for a Client, or seasonally, you can reuse them.

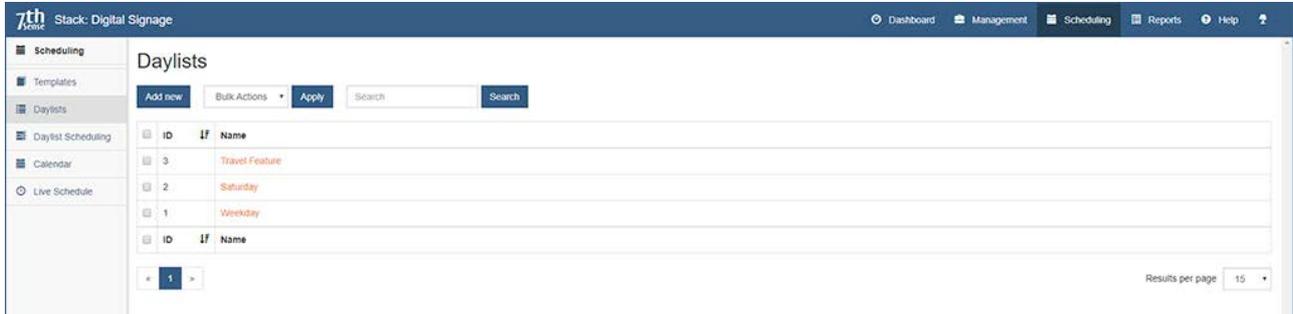
- Make sure your naming conventions are clear and meaningful.
- Filter Templates to list only active, archived, pooled or unpooled.
- Remove a Template from autoscheduling by unchecking the Pool checkbox. Add it back in, in the same way.
- Archive Templates by checking them in the list and using the Archive bulk Action.
- Recover archived Templates by checking them in the list and using the Recover bulk Action.
- Add new Templates at any time.

## Daylists

**Daylists** are used to schedule **Templates** at regular fixed times along the schedule timeline, for example, 09:00, 12:00 and 17:00 every weekday. This enables repeat sequences to be used many times by scheduling Daylists rather than individual Templates.

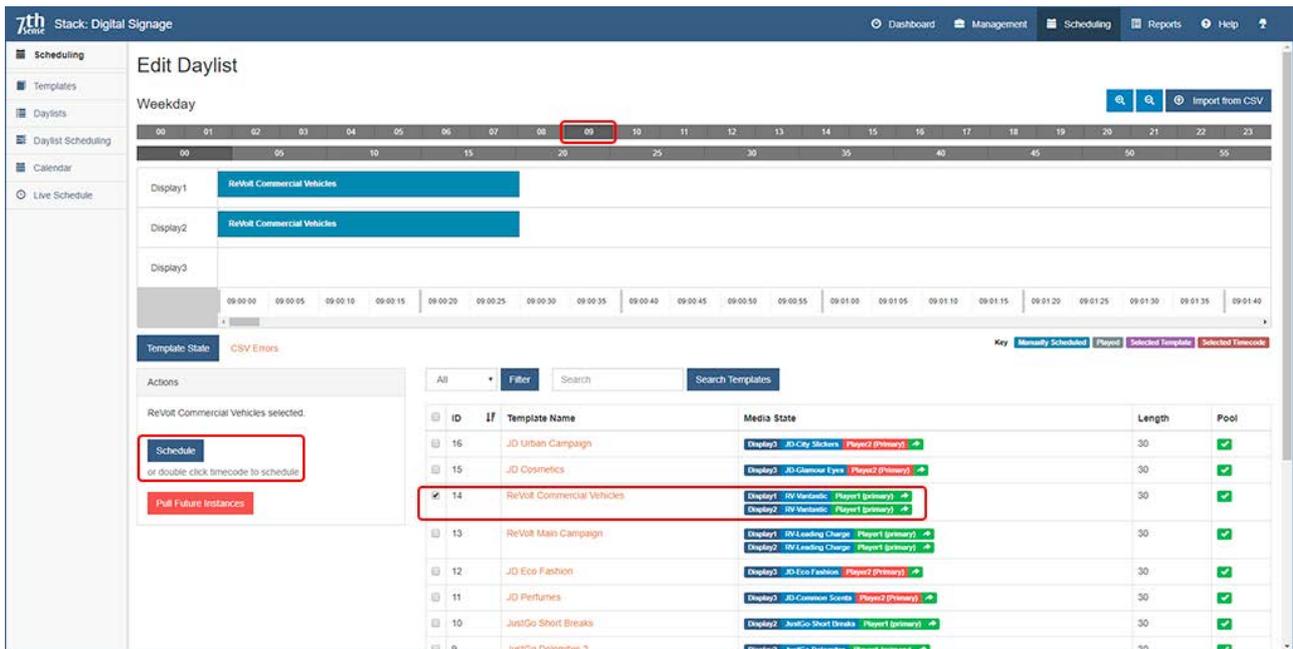
**Daylists** are a feature of manual scheduling.

Add names for your Daylists, and press 'Create' to save each. These will now be listed:



Click the name of a Daylist in order to add Templates to it, at required times. Any empty spaces will be filled by the autoscheduler.

The appearance is very similar to the Live Schedule, but is static. Select the hour to view, zoom in and out, and scroll within the selected hour.

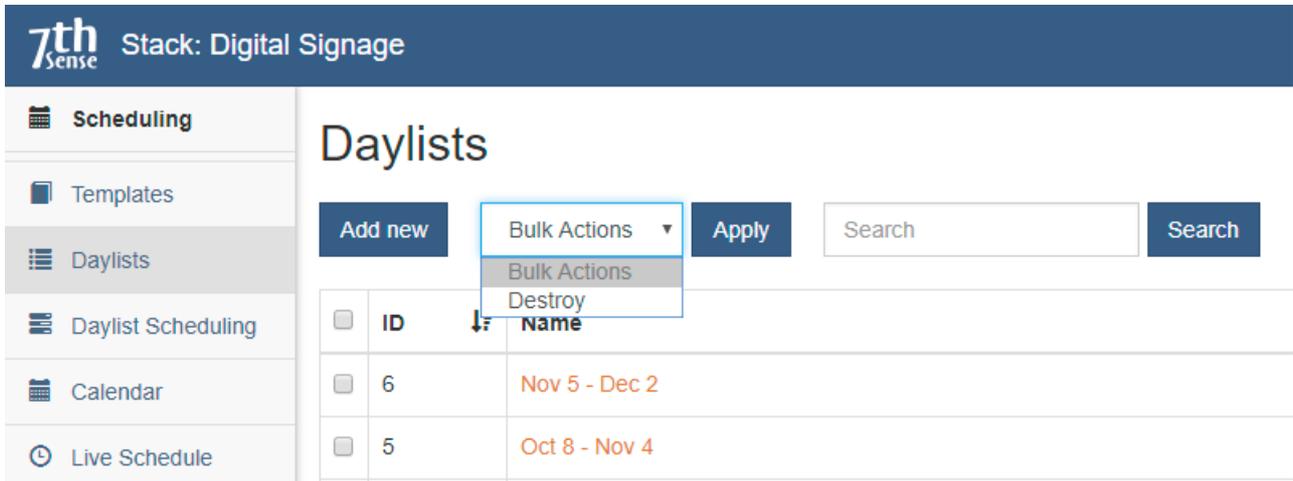


When you select one item from the list of Templates, you will see on the left, under 'Template State', available actions: either to Schedule the item or to remove all future scheduled instances.

Click 'Schedule' to add the item to the timeline, or just double-click on the timeline at the required starting time. In the above example, the selected Template maps the same Media Asset to two Screens, to play simultaneously. We can also see that this is a pooled asset, so even though we ensure it plays at 09:00 every weekday, if there is Contract capacity left after all its manual

scheduling, further plays will be distributed automatically. Its Category (Automobiles) will ensure separation from other Automobile adverts.

Unlike asset components, Daylists and Daylist Schedules can be deleted, but whilst you can edit the content lists, you cannot edit the name:



## Import Daylists from CSV

In some circumstances it may be more efficient to create Daylist allocations in a separate CSV list (e.g. in Excel, and save as: 'CSV (Comma delimited) (\*.csv)'). To do this, the timeslots and Screen names (columns) and Template names (rows) must be exact, in this format:

	A	B	C	D
1	Time	Display1	Display2	Display3
2	06:00:00	ReVolt Main Campaign	ReVolt Main Campaign	JD Urban Campaign
3	06:00:30	JD Step Out	JD Step Out	ReVolt Lifestyle
4	06:01:00	JustGo Dolomites	JustGo Cross Country	ReVolt Lifestyle
5	06:01:30	JustGo Dolomites	JustGo Cross Country	JD Urban Campaign
6	06:02:00	ReVolt Main Campaign	ReVolt Main Campaign	JD EcoStyle
7	06:02:30	ReVolt Commercial Vehicles	JustGo Mountains	JustGo Cities
8	06:03:00	ReVolt Commercial Vehicles	JustGo Mountains	ReVolt Lifestyle
9	06:03:30	JD Step Out	JD Step Out	JD Urban Campaign
10	06:04:00	JustGo Cross Country	ReVolt Commercial Vehicles	JD EcoStyle
11	06:04:30	JustGo Cross Country	ReVolt Commercial Vehicles	JD EcoStyle
12	06:05:00	ReVolt Main Campaign	ReVolt Main Campaign	JD Urban Campaign
13	06:05:30	JustGo Dolomites	JustGo Cross Country	ReVolt Lifestyle

Perhaps a block sequence is the same but at different times on different Screens. In Excel you can easily copy and paste sequences per screen or per timespan, and save the file for import and/or re-use. To save errors, start by copying and pasting template names from StackSignage into Excel.

To import your file, select the Daylist from the list to enter Edit, and use the toolbar button 'Import CSV':



Find your file, import it, and the Daylist will become populated.

## Daylist Scheduling (Rules)

It is more efficient to assemble playlists in the form of Daylists, and assign them to days of the week, or to specific date ranges, than to do this day by day. As the date rolls over at day end, StackSignage looks for the Daylist assigned to the next day, according to rules.

**Daylist Scheduling** defines **rules** that govern which Daylist plays on a particular day. **Manual scheduling** of a template takes precedence over everything else. Wherever there is no underlying rule, the autoscheduler fills in.

 A screenshot of the 'Create Daylist Schedule Rule' form in the StackSignage interface. The form includes a sidebar with navigation options like 'Scheduling', 'Templates', 'Daylists', 'Daylist Scheduling', 'Calendar', and 'Live Schedule'. The main form area has the following fields:
 

- Name:** A text input field containing 'Weekday'.
- Rule Type:** A dropdown menu set to 'Daily'.
- Days:** A list of days with checkboxes: Sunday (unchecked), Monday (checked), Tuesday (checked), Wednesday (checked), Thursday (checked), Friday (unchecked), and Saturday (unchecked).
- Valid Date Range:** Two date pickers showing '10 Oct 2018' and '09 Nov 2018'.
- Daylist:** A dropdown menu set to 'Weekday'.
- Buttons:** 'Create' and 'Cancel' buttons at the bottom, and a 'Create New' link.

### Name

Name rules clearly, for example to include the day or date range. It is better to avoid generalised rules, and to create rules that cover timespans.

### Rule Type

Daily or Date. Daily is typically days of the week during a calendar period, whereas Date is for the same date each month over a calendar period, or a holiday period (Christmas, public holiday).

### Days

For Daily type rules, the day(s) of the week during the overall date range.

**Date from / To**

For Date type rules, the date or date range in the month, each month of the overall date range.

**Valid Date Range**

The calendar period during which this rule applies.

**Daylist**

The Daylist used by this rule. (A Daylist can be used by more than one rule.)

## Daylist Rules Precedence

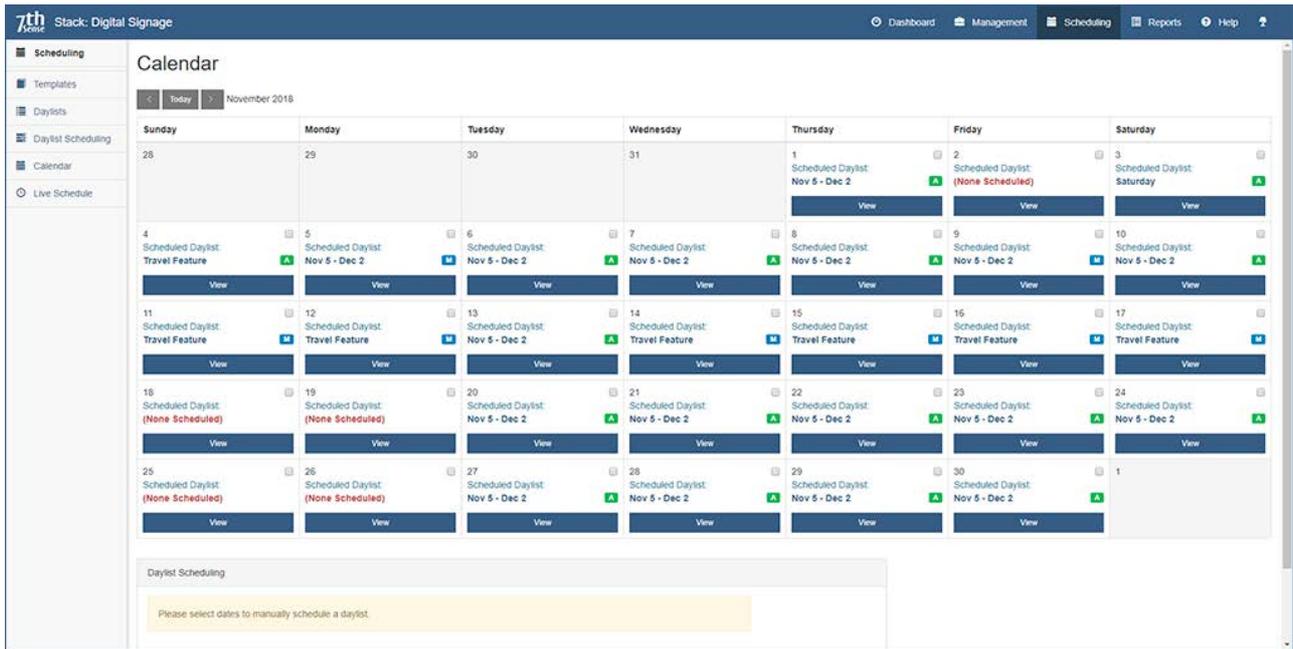
What happens if the Calendar receives two Daylist Schedules within the same date range?

- A manually-scheduled Daylist will always have precedence.
- Days in a daily schedule will have precedence over a date rule. *Example:* a daily schedule covers Mondays and Fridays. A date rule for the same period will apply only on days other than Mondays and Fridays.
- If there is no Daylist scheduled, the autoscheduler will fill all available timeslots.

## Calendar

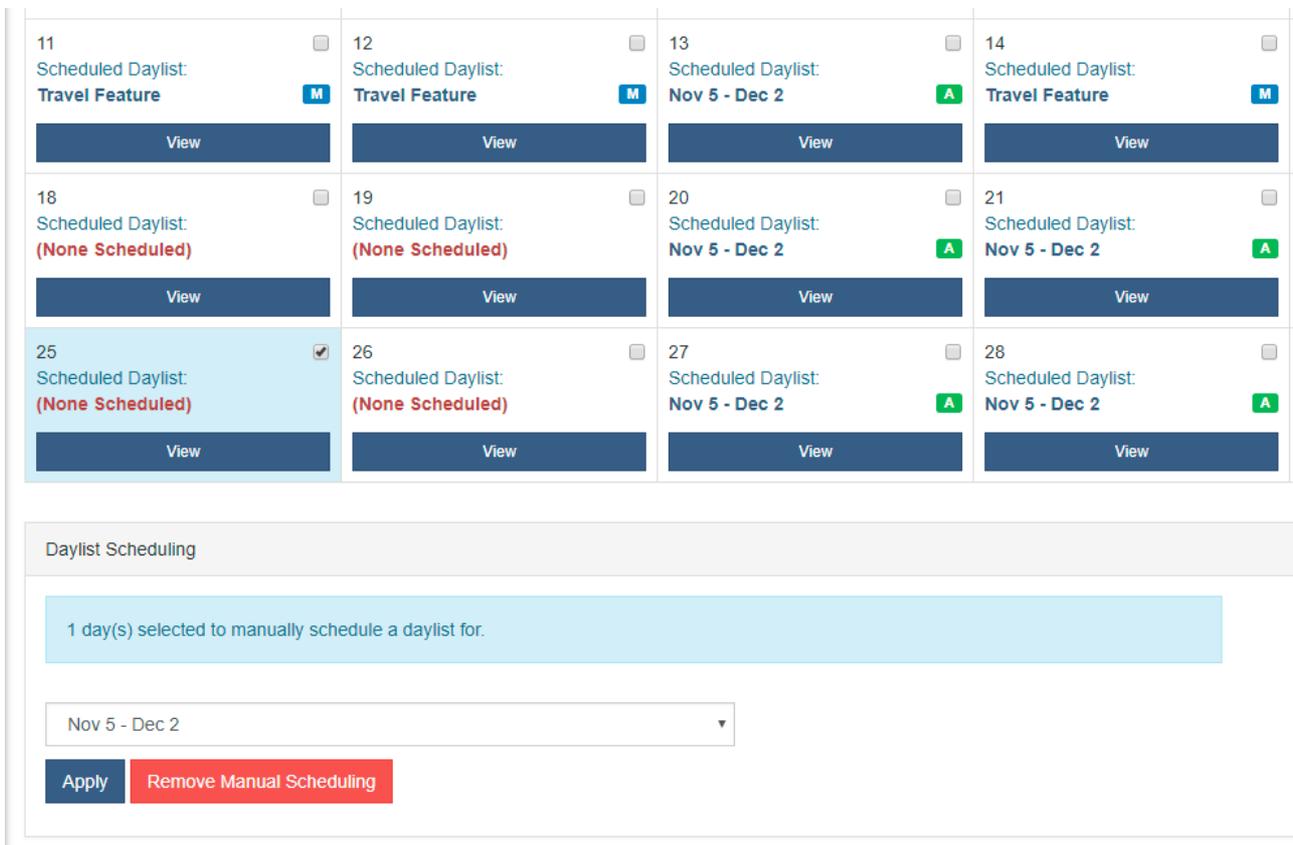
---

The Calendar shows the rules-based scheduled Daylists for one month at a time. The name of scheduled Daylists are shown, with a green 'A', manually-scheduled Daylists have a blue 'M', and unscheduled days show this in red.



## Adding and Removing Daylists Manually

Daylists can be added manually to the Calendar. Select one or more days (blue, ticked, below), select a Daylist from the dropdown list, and click 'Apply':



Manually-added Daylists can only be removed one at a time. Click to select a day that has been manually scheduled, and then Click the red 'Remove' button.

Individual Templates can also be added to, or removed from, a selected day. If a Daylist is not scheduled, click 'View' to show the Live Schedule for that day.

**Warning:** the next Daylist will only be loaded at the end-of-day roll-over, so the Live Schedule for tomorrow onwards will not yet be populated. When the Daylist loads, any previous manual additions will be overwritten.

## Live Schedule

On the Live Schedule, you see what is playing and what is scheduled to play. This is a combination of Daylists, Manual Template additions and autoscheduled Pool Templates.

For the general features of this layout, see [Scheduling](#) <sup>28</sup>.

By now you should have assembled everything to create a live schedule: Templates assembled in Daylists and Scheduled according to rules, even if you have not yet manually added anything. The Live Schedule shows you what is playing and scheduled today. If you select a Player server to track, or click 'Goto Now', you will see what is current:

ID	IF	Template Name	Media State	Length	Pool
16		JD Urban Campaign	Display2: JD City Slickers	30	✓
15		JD Cosmetics	Display2: JD Glamour Eyes	30	✓
14		ReVolt Commercial Vehicles	Display1: RV Metallic: Player1 (primary) Display2: RV Metallic: Player1 (primary)	30	✓
13		ReVolt Main Campaign	Display1: RV Leading Charge: Player1 (primary) Display2: RV Leading Charge: Player1 (primary)	30	✓
12		JD Eco Fashion	Display2: JD Eco Fashion	30	✓
11		JD Perfumes	Display2: JD Cosmos Scents	30	✓
10		JustGo Short Breaks	Display2: JustGo Short Breaks: Player1 (primary)	30	✓
9		JustGo Dolomites 2	Display2: JustGo Dolomites: Player1 (primary)	30	✓

**Key:** Auto Scheduled (Green), Manually Scheduled (Blue), Played (Grey), Selected Template (Red), Selected Timecode (Yellow)

Note the colour key:

Key **Auto Scheduled** **Manually Scheduled** **Played** **Selected Template** **Selected Timecode**

and identify these on the schedule in the example above.

## Intervening on the Schedule: Manual Addition and Removal of Templates

In the same way as Templates are added to a Daylist, they can be added to the Live Schedule ahead of the current time. If you select 'Don't Track' (top right) you can scroll through the timeline to where you want to add or remove a Template.

Select the Template you want to act on, the time you want it to address, then use the Actions:

The screenshot shows a scheduling interface with a timeline at the top and a table of templates below. The timeline has a red highlight at 17:00:40. The table has columns for ID, IF, Template Name, Media State, Length, and Pool. The 'ReVoit Commercial Vehicles' template (ID 14) is selected.

ID	IF	Template Name	Media State	Length	Pool
16		JD Urban Campaign	Display2 JD City Stickers →	30	✓
15		JD Cosmetics	Display3 JD Glamour Eyes →	30	✓
14		ReVoit Commercial Vehicles	Display1 RV Vansatic Player1 (primary) → Display2 RV Vansatic Player1 (primary) →	30	✓
13		ReVoit Main Campaign	Display1 RV Leading Charge Player1 (primary) → Display2 RV Leading Charge Player1 (primary) →	30	✓

- Add with the blue 'Schedule' button (or double-click the timeline position).
- Pull all uncommitted instances with the red 'Pull' button.

## Dashboard

Dashboard is the server management page on the Scheduler server. Here is the appearance of our example setup, with two Player servers running the DeltaServer software, and the Scheduler server itself. Here you can see which Server drives which Screen.

The screenshot shows the StackSignage Dashboard for Scheduler version 2.0.6-beta. It features two main sections: Delta Media Servers and Schedulers.

**Delta Media Servers:**

- Player1 (primary):** Status: ONLINE. Scheduler: Scheduler (primary). Player Version: 2.0.6-beta. Actions: Re-Sync, Refresh Resources, View Log, Stop Service. Queue: 1. Status: Waiting for next queue event.
- Player2 (Primary):** Status: ONLINE. Scheduler: Scheduler (primary). Player Version: 2.0.6-beta. Actions: Re-Sync, Refresh Resources, View Log, Stop Service. Queue: 1. Status: Waiting for next queue event.

**Schedulers:**

- Scheduler (primary):** Status: ONLINE. Action: Stop Service.

## Players

### Re-Sync

If your StackSignage system is not chasing an LTC (timecode) source, you will need to use this when starting the day or session. Any break in service may also require a timing re-sync to restore the live schedule. Re-Sync set the realtime from the Scheduler system clock on each DeltaServer (Player) in turn.

### Refresh Resources

The DeltaServer software requires its internal lists of media to be refreshed whenever media are added or removed. To do this, press 'Refresh Resources' in Dashboard *for each Player server*.

### View Log

This displays events as they happen (mainly useful only for troubleshooting):

```

← → ↻ 🏠 ⓘ Not secure | 10.100.101.227:8081/log
5:15:43 PM dss-player fetching item for 17:16:10:00 +0ms
5:15:43 PM dss-player **INSERTING Item id: 1091 +108ms
5:15:43 PM dss-player queueing JustGo Alpine Cities at 17:16:10:00 +1ms
5:15:43 PM dss-player inserting item id: 1091 +66ms
5:15:43 PM player-client inserted JustGo Alpine Cities at 17:16:10:00 +57ms
5:15:44 PM dss-player Check if we pass the start of the slot : 17:16:10:00 (end of last item) < 17:15:40:20 (Last timing event) +367ms
5:15:44 PM dss-player Check if we pass or are equal to the end of day turn around : 17:16:10:00 (end of last item) >= 24:00:00:undefined (turn around time) +6ms
5:15:44 PM dss-player Check For Next Item: 17:16:10:00 < 17:15:40:20 +1ms
5:15:44 PM dss-player fetching item for 17:16:10:00 +1ms
5:15:44 PM dss-player **INSERTING Item id: 1092 +120ms
5:15:44 PM dss-player queueing JustGo Cross-Country at 17:16:10:00 +7ms
5:15:44 PM dss-player inserting item id: 1092 +60ms
5:15:44 PM player-client inserted JustGo Cross-Country at 17:16:10:00 +57ms
5:15:47 PM scheduler-client requesting snapshot +3s
5:15:47 PM scheduler-client requesting snapshot +2ms
5:15:47 PM dss-player Error: Only take snapshot every 5 plays +18ms
5:15:47 PM dss-player Error: Only take snapshot every 5 plays +1ms
5:15:48 PM scheduler-client requesting snapshot +578ms
5:15:48 PM dss-player Error: Only take snapshot every 5 plays +28ms
5:16:12 PM dss-player logged play event for item 1090 +24s
5:16:12 PM dss-player logged play event for item 1090 +3ms
5:16:13 PM dss-player logged play event for item 1090 +588ms
5:16:13 PM dss-player Check if we pass the start of the slot : 17:16:40:00 (end of last item) < 17:16:10:20 (Last timing event) +453ms
5:16:13 PM dss-player Check if we pass or are equal to the end of day turn around : 17:16:40:00 (end of last item) >= 24:00:00:undefined (turn around time) +1ms
5:16:13 PM dss-player Check For Next Item: 17:16:40:00 < 17:16:10:20 +1ms
5:16:13 PM dss-player fetching item for 17:16:40:00 +2ms
5:16:13 PM dss-player **INSERTING Item id: 1093 +130ms
5:16:13 PM dss-player queueing ReVolt Commercial Vehicles at 17:16:40:00 +1ms

```

## Stop Service

If any server is showing red OFFLINE instead of green ONLINE, start the service here. Use this **only** for restarting: click stop and then start without refreshing the browser page between, or communication with the server will be lost.

## Gear wheel: edit Server settings

This takes you to the [Servers and Roles](#) <sup>18</sup> management page.

## Schedulers

You might have more than one Scheduler. Different Schedulers could be driving separate Players (effectively running two systems at once), because Player servers are assigned to Schedulers individually. If a scheduler is a backup, it may be running and online, but Players will not be listening to it until they are reassigned.

You can view the Scheduling pages from any active Scheduler by clicking its name.

## Reports

Reports enable you to filter, view and/or print lists of everything that has happened over a period of time, see what is available, what has played and what is scheduled. Reports include:

- Template Stats
- Client Reports

- Delta Resources
- Logs
- Snapshots (where installed)

Refresh any report by using the F5 key or the browser refresh button.

## Template Stats

This report lists all your templates (ID is order of creation). Hover over the heading of the Name column to sort by Template name.

ID	Name	Future Instances
16	JD Urban Campaign	✓ 8 Scheduled + Pool
15	JD Cosmetics	✓ 8 Scheduled + Pool
14	ReVot Commercial Vehicles	✓ 2 Scheduled + Pool
13	ReVot Main Campaign	✓ 8 Scheduled + Pool
12	JD Eco Fashion	✓ 8 Scheduled + Pool
11	JD Perfumes	✓ 8 Scheduled + Pool
10	JustGo Short Breaks	✓ 8 Scheduled + Pool
9	JustGo Dolomites 2	✓ 8 Scheduled + Pool
8	JustGo Dolomites	✓ 8 Scheduled + Pool
7	JustGo Cross-Country	✓ 8 Scheduled + Pool
6	JustGo Cities	✓ 8 Scheduled + Pool
5	JustGo Mountains	✓ 8 Scheduled + Pool
4	JustGo Alpine Cities	✓ 8 Scheduled + Pool
3	Filer Display 3	✓ 8 Scheduled + Pool
2	Filer Display 2	✓ 8 Scheduled + Pool

For each you can see if it is Active (i.e. in the pool for autoscheduling, or manually scheduled at some time ahead, and for how many times). Active Templates show green. An inactive Template (not in the pool and with no forward manual schedules) will show red:

<b>Future Instances</b>
✔ 0 Scheduled + Pool
✔ 0 Scheduled + Pool
✔ 2 Scheduled + Pool
✔ 0 Scheduled + Pool
✘ 0 Scheduled
✔ 0 Scheduled + Pool

## Client Reports

You can view and print Templates played by client and date range. Even without the Snapshot app, this provides a complete list of what was played, on which Screen, and when. If you have set yourself up as a Client, you can see how your [filler Templates](#) <sup>(32)</sup> have been used.

The screenshot shows the 'Client Reports' page in the 7thSense software. The client is 'Adsite Displays Co.' and the date range is '10 Oct 2018' to '12 Oct 2018'. The report is broken down into two displays: 'Display1' and 'Display2'. Each display has a table of plays with columns for Date, Template, Plays, and Total Minutes.

Display1			
Date	Template	Plays	Total Minutes
10 Oct 2018	Filler Display 1	2	0.16666666666666666
12 Oct 2018	Filler Display 1	4	0.3333333333333333
			Total: 0.49999999999999994 mins

Display2			
Date	Template	Plays	Total Minutes
10 Oct 2018	Filler Display 2	10	0.8333333333333334
12 Oct 2018	Filler Display 2	2	0.16666666666666666
			Total: 1 mins

## Delta Resources

This report lists Media Assets, showing type, the number of future manual scheduled events, whether it is pooled, and whether its actual media are present on the Players. Hover over the heading of 'Name' or 'Type' to sort by that column (ID is order of creation).

ID	IF	Name	Type	Future Instances	Attached to Pool Template	Assets on Players
16		Filer Display 3	Image	0	✓	✓
15		Filer Display 2	Image	0	✓	✓
14		Filer Display 1	Image	0	✓	✓
13		RV-Vanastic	Movie	2	✓	✓
12		RV-Leading Charge	Movie	0	✗	✓
11		RV-Go Anywhere	Movie	0	✗	✓
10		JustGo-Mountains	Movie	2	✓	✓
9		JustGo-Short Breaks	Movie	0	✓	✓
8		JD-Shoes	Movie	0	✗	✓
7		JD-Glamour Eyes	Movie	0	✓	✓
6		JD-Eco Fashion	Movie	0	✓	✓
5		JustGo-Delimites	Movie	0	✓	✓
4		JustGo-Cross Country	Movie	0	✓	✓
3		JD-Common Scents	Movie	0	✓	✓
2		JD-City Sickers	Movie	0	✓	✓

Unpooled items can only be scheduled manually and will not fill gaps via the autoscheduler.

If there is a red cross under 'Assets on Players', this indicates that a named resource in a Media Asset no longer has this file available on the Players. Either the media needs copying back onto the Players, or the Media Asset should be archived.

## Logs

Every time a Template arrives to play, the event is recorded in the system logs, and these can be listed for a span of up to three days. Click 'Display' to list the results or 'Export to CSV'.

Hover over the heading of any column to sort by that column.

ID	IP	Date	Time	Template	Screen	Server	Live
2589		12 Oct 2018	10:44:55	Filler Display 1	Display1	Player1 (primary)	✓
2588		12 Oct 2018	10:44:55	Filler Display 2	Display2	Player1 (primary)	✓
2587		12 Oct 2018	10:44:50	Filler Display 1	Display1	Player1 (primary)	✓
2586		12 Oct 2018	10:44:50	Filler Display 2	Display2	Player1 (primary)	✓
2585		12 Oct 2018	10:44:20	JustGo Alpine Cities	Display1	Player1 (primary)	✓
2584		12 Oct 2018	10:44:20	JustGo Cross-Country	Display2	Player1 (primary)	✓
2583		12 Oct 2018	10:43:50	ReVolt Commercial Vehicles	Display1	Player1 (primary)	✓
2582		12 Oct 2018	10:43:50	ReVolt Commercial Vehicles	Display2	Player1 (primary)	✓
2581		12 Oct 2018	10:43:20	JustGo Alpine Cities	Display1	Player1 (primary)	✓
2580		12 Oct 2018	10:43:20	JustGo Cross-Country	Display2	Player1 (primary)	✓
2579		12 Oct 2018	10:42:50	ReVolt Commercial Vehicles	Display1	Player1 (primary)	✓
2578		12 Oct 2018	10:42:50	ReVolt Commercial Vehicles	Display2	Player1 (primary)	✓
2577		12 Oct 2018	10:42:50	ReVolt Commercial Vehicles	Display2	Player1 (primary)	✓
2576		12 Oct 2018	10:42:50	ReVolt Commercial Vehicles	Display2	Player1 (primary)	✓
2575		12 Oct 2018	10:42:20	JustGo Alpine Cities	Display1	Player1 (primary)	✓

The .csv export of this list has these columns:

Date	Time	Template	Screen	Server	Client
------	------	----------	--------	--------	--------

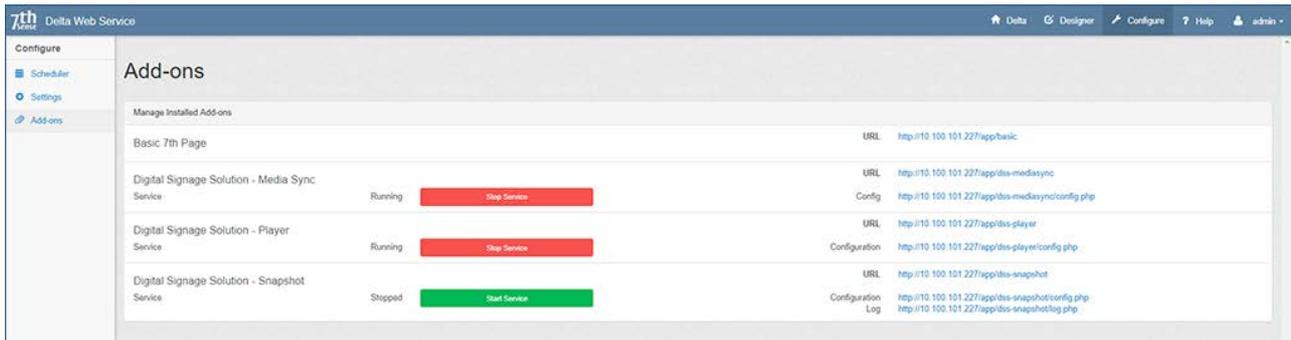
## Snapshots

If you have the Snapshot app installed, this report lists all the snapshot timestamps with a link to the images taken, and which Template is matched on which Screen. Hover the column heads to sort by 'Timestamp' or 'Screen'.

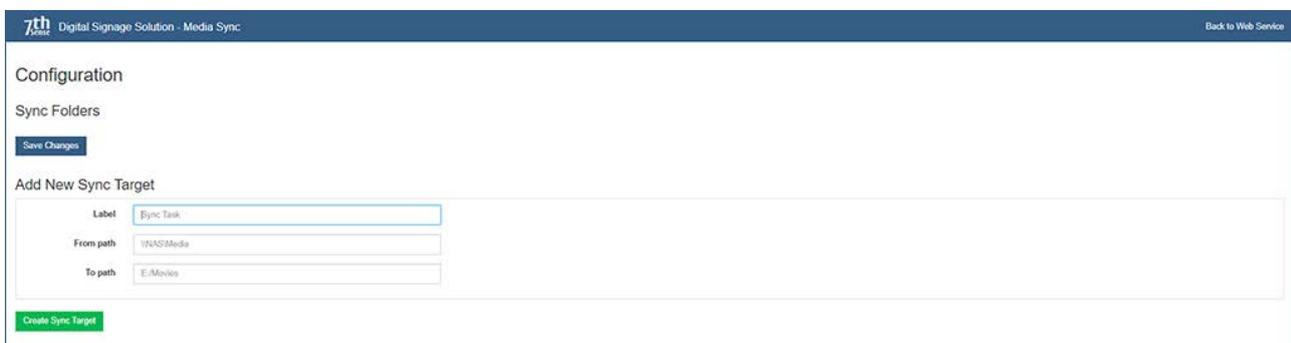
➤ [Snapshot API](#) <sup>50</sup>

## Media Sync

Media Sync is another Add-on in the Stack software, run on each Player server. Go to the IP address of each player, under Configure, select Add-ons, find Media Sync and start it running:



On the right is a link to its Config page. Here you can add your sync targets (between a NAS and this Player server):



Do this for each folder you want to sync between the NAS and the Player resource folders (E:\Movies, C:\Images, C:\Effects etc.).

Player servers will check for changes on the NAS automatically at regular intervals to add or remove media as changes occur on the NAS.

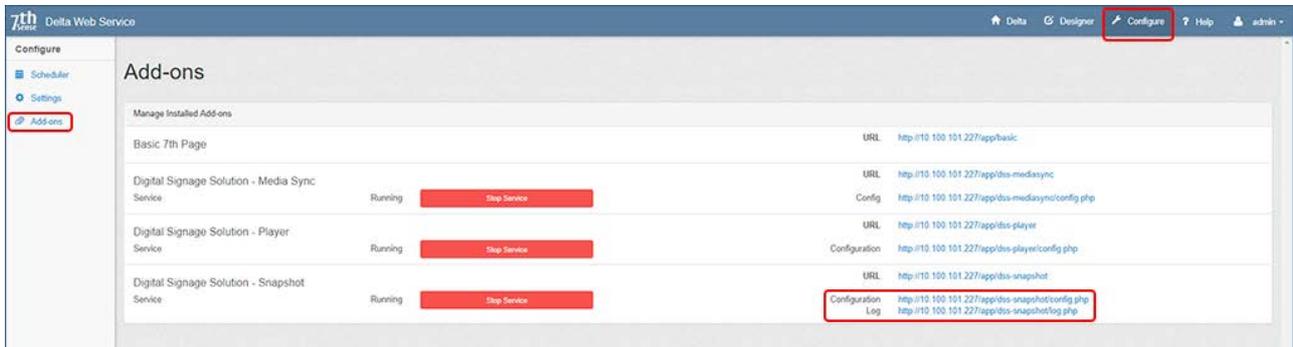
**Note:** for complex installations the Media Sync targets are all stored in a JSON file, which for accuracy and convenience can be copied between Player servers.

## Snapshot

The **Snapshot app** is a proof of display, not just the intention to play, and keeps a log of webcam images. The camera is triggered by **Templates** where the user selects how often a play is recorded.

Snapshot runs on the Scheduler PC. On the Scheduler PC, open a browser tab and type in the IP address of the Scheduler.

Go to Configure (top), the Add-ons (left) and the Snapshot add-on will probably be showing a green button 'Start Service'. Click this and on the right, see the two other page links, one to configure the comms port for the camera and the other to the log page of snapshot events.



## For Developers

Some StackSignage capability can be extended with a little JavaScript programming ability. The following pages are intended for developers, and if you need further help, please contact [support@7thsense.one](mailto:support@7thsense.one).

## Pre-check Template URL

A **Template** Pre-check can be used to query an external API to remotely *reject* a Template from being scheduled.

A common use-case is querying a feed provider to check if there is content to display in a feed, before it is shown on screen, rejecting the feed Template if no content is available.

If set, the Template Pre-check URL will be called immediately prior to the Template being queued for playback. If the Pre-check fails, the Template will be rejected and another scheduled according to the normal rules for Pool Templates.

## API responses

The feed provider must provide a HTTP route which returns either of the following responses:

Success response

```
{
  "scheduleTemplate": true
}
```

Fail response

```
{
  "scheduleTemplate": false
}
```

## Web Page JS Events

---

DeltaServer has a built in Web Page media resource, which has the ability to trigger JavaScript events on timeline events.

### Usage

When enabled Delta will embed a library at `window.DeltaServer` which can be used to hook into these events.

A callback is used to indicate that the library is ready, this can be triggered by creating a function at `window.onDeltaServerReady`.

It is important that this function is created at the global level outside of any typical loading callbacks/lambda's such as `window.onready` or `jQuery $(function() {});`.

### Sample code

```
window.onDeltaServerReady = function () {
  DeltaServer.on('frame', function (relativeFrame, timelineFrame,
progress) {
    // called on each frame
  });
  DeltaServer.on('enterscope', function () {
    // called on resource entering scope
  });
  DeltaServer.on('leavescope', function () {
    // called on resource leaving scope
  });
}
```

```
    });  
}
```

## On 'frame' event arguments

Name	Type	Description
relativeFrame	Integer	Frame number relative to the start of the Web Page resource, that is the number of frames into the current resource.
absoluteFrame	Integer	Frame number of the timeline of this Web Page resource.
progress	Float	From 0 to 1, indicates the progress through the resource. Useful for synchronising animation and events across multiple Web Pages or Delta servers.

## Development and Debugging

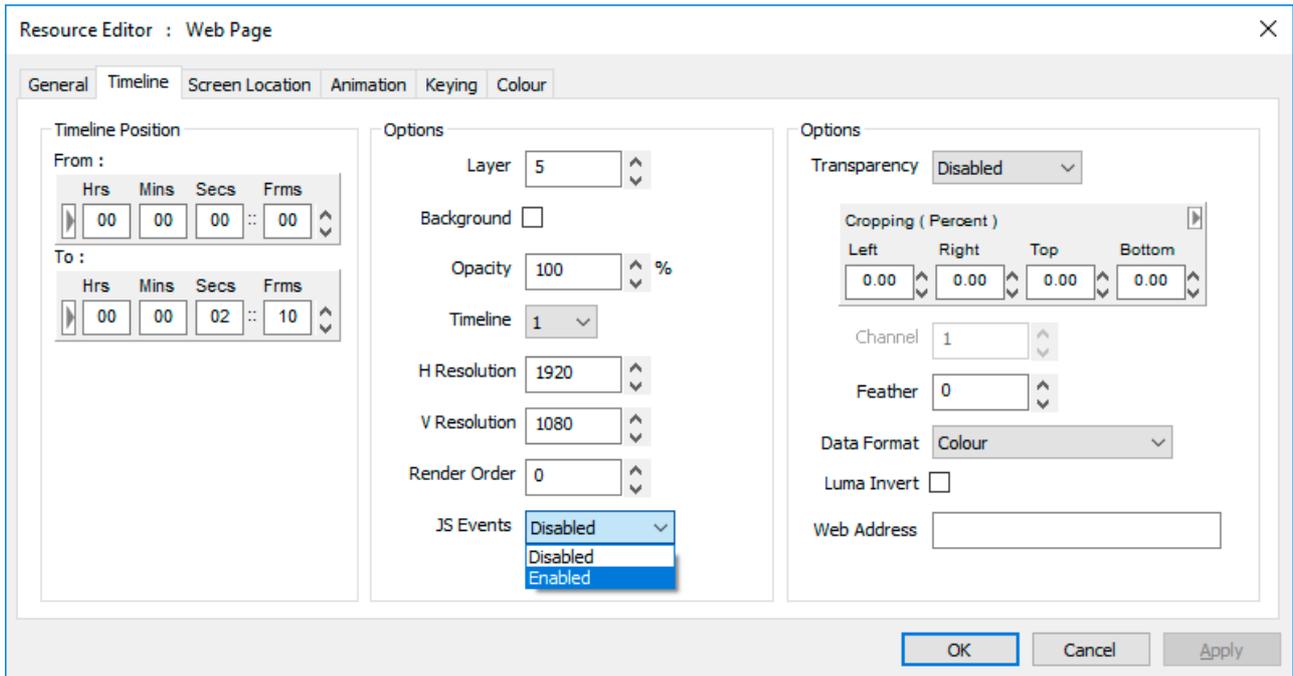
A mock DeltaServer JS library is provided for testing events from a regular web browser. The library can be downloaded with the following link and included in the webpage like a normal JS library.

➤ Download [mock-deltaserver.js](#)

## Enabling JS Events

All StackSignage scheduled Web Page Templates have JavaScript events enabled.

To manually enable for testing/development, the 'JS Events' checkbox in the Web Page Resource Editor dialog must be ticked:



## Snapshot API

The Snapshot API allows images to be taken from a remote webcam location and saved to a network or local path.

### config.json

A config file is used to set the following settings and can be found in the app directory.

#### Settings

Name	Type	Description
httpPort	number	Port used to control the application by HTTP requests

#### Example

```
{
  "httpPort": 8084
}
```

## cameras/cameras.json

The camera definition file is used to define URL and login details for camera instances.

The key of each definition is used to identify the preset name used when requesting snapshots.

Post-processing can be applied, available options are `rotate: 0-360` and `quality: 0-100`.

`type` must be specified as a camera type implemented in **camera-interfaces.js**. Currently only the Panasonic WV range of cameras is supported.

The file is located at `C:/7thsense/web/data/app/dss-snapshot/app/cameras`.

### Example

```
{
  "cameraOne": {
    "type": "WV",
    "hostname": "192.168.0.100",
    "port": 5000,
    "auth": {
      "username": "Username",
      "password": "Password"
    },
    "resolution": 1920,
    "postProcessing": {
      "rotate": 90,
      "quality": 50
    }
  }
}
```

## /snapshot

Requests and saves an image from a webcam to a destination relative to the dss-snapshot host machine.

### Request

`http://127.0.0.1:8084/snapshot?camera=cameraOne&preset=1&path=c:/&filename=image.jpg`

### Query Parameters

Name	Type	Description
------	------	-------------

camera	string	The unique camera identifier as configured in cameras.json
preset	number	The preset camera position, note there is a 2 second delay for moving the preset
path	string	Absolute path to save image to, this can be a network or local path and will be created if it does not exist
filename	string	Filename to save the new file as, must include extension

### Response

ContentType: application/json

```
{
  "status": "success",
  "data": {
    "path": "c:/",
    "filename": "image.jpg",
    "camera": "cameraOne",
    "preset": "1"
  }
}
```

### /cameras

Lists all cameras in cameras.json

Unique cameras are identified by object key, in this example "cameraOne"

### Request

http://127.0.0.1:8084/cameras

### Response

ContentType: application/json

```
{
  "status": "success",
  "data": {
    "cameraOne": {
      "type": "WV",
      "hostname": "192.168.0.100",
    }
  }
}
```

```
"port": 5000,
"auth": {
  "username": "Username",
  "password": "Password"
},
"resolution": 1920
}
}
```

## /log

### Request

http://127.0.0.1:8084/log

### Response

ContentType: text/html

The response is a web page which lists a rolling log of the last 1000 messages processed by the snapshot server.

## System Backup and Switching

### MySQL Database

In order to preserve your records and your content, the MySQL database should be backed up on a regular basis, even if you are not running backup systems. How you achieve this is an IT systems decision, but we could recommend MySQL Workbench as a tool for exporting and recovery.

### Switching to a Backup Player

If a Player server fails, or you want to take it out for maintenance, set the display switcher to the backup. If this is online and running, display is immediate: the Scheduler is addressing both. Reassign the role of the Backup to Primary, and if still online, assign the Primary to Backup. This ensures the reports and logs relate to what is going to the displays.

## Switching to a Backup Scheduler

If a Scheduler fails, or you want to swap it out, your main concern is the database. If it is being shared, simply reassign the Scheduler for each Player (in Dashboard, click the gear wheel for each Player in turn). If the database is not shared, but copied onto the backup – perhaps on a daily basis – all you will lose is the day's manual scheduling changes.

## Document Information

Date	Document edition	Software version	Revision Details	Author/Editor
October 2015	1	StackSignage 1.0	First release	Andy Briggs
October 2018	2	StackSignage 2.0.6	Rewritten, re-illustrated and updated	Andie Davidson

## A

add 15  
archive 15

## B

backup 53  
backup servers 18  
blending Templates 27

## C

calendar view of schedules 36  
camera 46  
categories 20  
clients 19  
conditional scheduling 47  
configure Snapshot webcams 50  
contracts 21

## D

dashboard 39  
daylist rules 35  
daylists  
  csv 32  
  import 32  
delete 15  
DeltaGUI 8  
DeltaServer 8  
digital signage 5  
display areas 17  
display configuration 8  
display inside a display 22  
displays 17

## E

edit 15

## F

filter 15

## I

installation 11

## L

layouts 22  
live schedule  
  manual changes 38  
loading media resources 24  
log report of played items 44  
logs 39  
LTC chasing 11

## M

media assets 24  
media lists 13  
media loading 13  
media sync 24  
Media Sync add-on 45  
menus 13

## N

navigation 13

## P

player server 18

## R

recover 15  
refresh resources 39  
reports 41  
  client 43  
  played events 43  
  templates 42  
re-sync 39  
running the Signage apps 11

## S

schedule rules 35  
scheduler server 18  
scheduling  
  automatic 28  
  manual 28  
  timeline navigation 28  
  timeline view 28  
  toolbar 28  
scheduling, manual 32  
scheduling, manual and automatic 35  
screens 17

- search 15
- server control 39
- servers 18
- signage 5
- Snapshot API 50
- Snapshot API (config) 46
- snapshot report
  - image links 45
  - snapshots by screen 45
- software agreement 5
- sort 15
- Stack web interface
  - browser support 8
- StackSignage
  - architecture 5
  - browser recommendation 8
  - components 10
  - player 5
  - scheduler 5
  - server requirements 8
  - snapshot 5
  - terminology 10
- starting the Signage apps 11
- stop and start a service 39
- switching to backups 53
- synchronise media 24

## T

- templates
  - creating 30
  - managing 30
  - naming 30
  - pooled 30
  - scheduling 30
- transitions and overlaps 27

## W

- web pages, enabling js events 48
- web view 48
- webcam 46

## Z

- zones (layouts) 22







E: [info@7thsense.one](mailto:info@7thsense.one)  
W: [7thsense.one](http://7thsense.one)

7thSense Design Ltd  
2 The Courtyard, Shoreham Road  
Upper Beeding  
Steyning  
West Sussex  
BN44 3TN  
UK

T: +44 (0) 1903 812299

7thSense Design LLC, Michigan  
332 E Lincoln Ave  
Suite 100  
Royal Oak, MI 48067  
USA

T: +1 248 599 2717

7thSense Design LLC, Orlando  
4207 Vineland Rd  
Suite M1  
Orlando, FL 32811  
USA

T: +1 407 505 5200