

## White Paper

### How does Scala work?



In a world full of Personal Video Recorders, Sky+ boxes and TiVos<sup>®</sup>, viewers get a fiendish pleasure out of zapping commercials at every chance. Various surveys suggest that over 80% of PVR users always skip commercials. It's not the same old game for advertisers anymore: the rules have changed. How does the average brand manager then reach his audience? And among the myriad of choices for advertising, how can you know that you are getting a decent ROI? How can you guarantee your target audience is listening?

These realities are forcing everyone to "think outside the house". Fortunately, there is a way to reach your audience that is exploding today. It's called dynamic digital signage and Scala is the recognized leader in the industry.

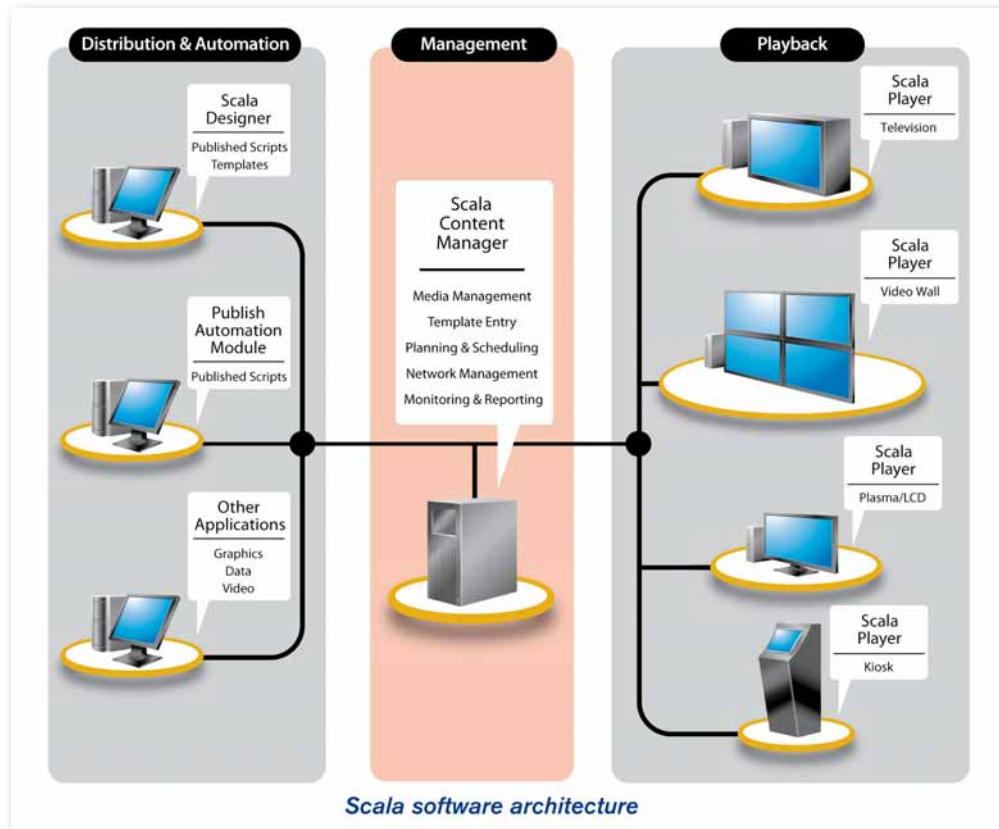
The good news is that deploying a digital signage network is no longer rocket science! To take the mystery out of digital signage networks this white paper addresses the question posed to Scala personnel almost everyday:

***How does Scala work?***

## Overview

This paper will discuss the tools and technology available from the industry-leading Scala software suite that delivers an end-to-end signage solution for your focused message to reach your audience at the right place at the right time.

At the heart of Scala's field-proven software are four key components:



### Designer:

Scala Designer is a truly unique and diverse application that allows you to create stunning and imaginative multimedia productions - utilizing motion, colour, graphics, text animation, sound design and special effects - while creatively highlighting the message you want to emphasize. Although it can be used with still images, the real purpose of Designer is to create a rich environment of sounds and images that flow like a professional video effectively responding to outside input. In Designer you can even create templates for your network that can later be populated via a web-based form by anyone with an internet-connected computer.

### Content Manager:

Scala Content Manager is a breakthrough in media broadcast distribution, scheduling and management. Utilizing an intuitive, Internet-based interface, Scala scripts and media are effectively organized, scheduled, delivered and updated. Additionally, networks and players are fully managed and monitored, thereby keeping media messages up and running with ease.

Manage your digital signage content with plan-based content management, planning, and scheduling tools from any Internet connection in the world.

**Media Player:**

Managed entirely through the Content Manager, Scala Media Player provides stable reliable multimedia 24/7/365 playback for virtually any environment. Content can be fully dynamic and driven by data (e.g. POS databases) at remote playback locations.

**EX Modules:**

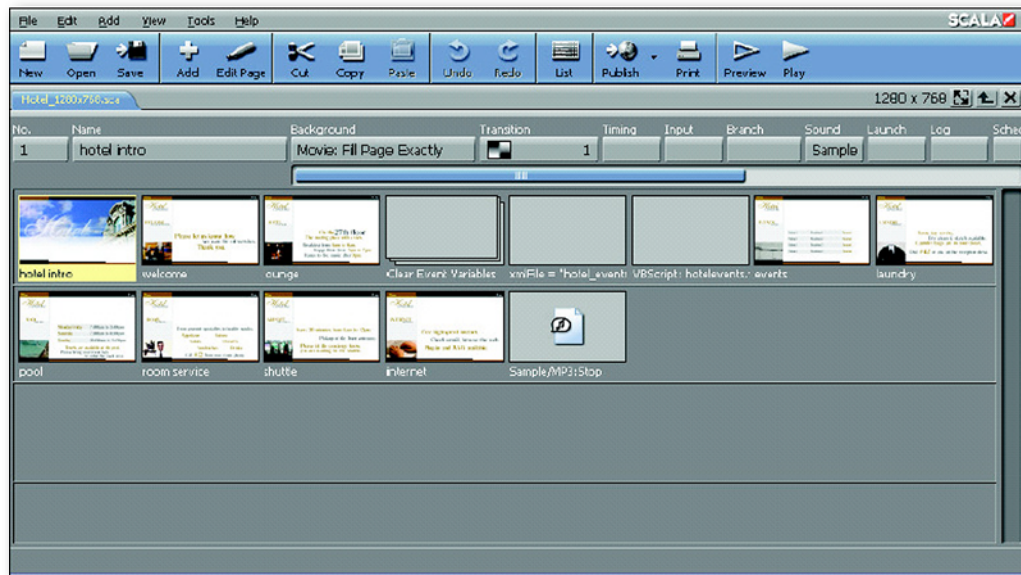
EX Modules are available for both Designer and Content Manager. EX Modules for Designer facilitate full control of components like TV Tuner Cards, external video switchers, weather stations, scanners, etc. EX Modules for Content Manager provide additional tools to enhance your digital signage network. Additional EX Modules include the Playback Audit EX Modules to report on the content played, and the Template Composer EX Module, which allows anyone to enter text into a preset template from a web-based form. No Graphic Designer needed.

Due to the dynamic nature of playback, syndicated national news feeds (data feeds) are also possible. Other key features include verification of ad plays and open architecture.

Scala is able to assist clients in every phase of the deployment, operation and content creation management of their digital signage networks through its Services division.

## Scala Designer

Scala Designer is the fastest, most cost-effective solution for creating truly dynamic content for digital signage. You can author professional media in an attention-grabbing environment for virtually any type of display by incorporating your existing media files into a Scala script. Designer gives you more creative control of your content with flexibility and real-time edits not offered by video production. While your Scala network does not require that your content come from Designer, it is the best way to create rich, professional content that can be changed quickly and easily without sacrificing any attention-grabbing appeal.



## Authoring

Designer makes it possible for you to use your PC to create productions that use special effects - movement, colour, graphics, animation, sound - to highlight text and illustrate the points you want to emphasize. Although it can be used with still images, the real purpose of Designer is to create dynamic productions - sequences of images that flow like a professional video and can respond to outside input.

Designer enables you to do this with virtually any type of production, regardless of your background or level of experience. Whether you are an independent, one-person multimedia producer and need these facilities only occasionally, or have an entire department of media professionals with a daily roster of projects, you can use Designer to make your work more lively and informative.

For tasks that range from designing product advertisements for digital signage that run continuously in storefronts, creating engaging presentations for corporate communications, or creating informational programming for hotels, universities, airports, or offices, Designer is the ideal tool.

## Scripts

In Designer, your “production” is defined as a *script*. A script in Designer is a file that specifies a series of *events* and their timing. The events in a script are the individual image files, sound files, text lines, and other items that appear in the final production.

However, you don't have to work with an Designer script the way a programmer works - through a series of text commands. You may write and edit the script entirely through the Scala graphical user interface. This shows you the script as one or more pages of information, each of which can be created or designed graphically and arranged in any order you choose.

### Full Screen and Windowed Operation

Designer is designed to be used both in a windowed operation while authoring, and as a full-screen previewer during playback.

In the windowed operation, you can resize the Designer window as desired, using familiar drag-and-drop techniques to add graphics and other files to a script. The flexible user interface design adapts itself to different window sizes and shapes providing maximum versatility.

When playing back in full screen mode, Designer allows you to specify screen resolution, colour depth, and refresh rate for optimal multimedia performance and adaptability.

## File Management

The Scala Designer File dialog gives you access to all the drives, folders and files normally available from your PC. It is designed to give you direct access to the files you need most as you work in Designer.

In Designer, the files used in a script may be background images, sound effects, animations or graphics such as clip-art images, drawings or symbols, even other scripts. Many files come with Designer but you can use files from other sources, for example a library of clip art on a CDROM.

As you expand the amount of work you do in Designer, many files you use, such as script files, will be your own.

## File Types

The most common file-type extensions used in Designer are shown in the table below.

Extension File Type

Extension	File type
.SCA	Script
.SCB	Published script
.BTN	Predefined button or button preset
.BMP, .GIF, .JPG, .WMF, .PCX, .PNG, .TIF, etc.	Background, drawing, clip, or other graphic file
.WAV, .MP3	Sound sample (digital audio)
.MID	MIDI file
.GIF	Animation
.AVI, .MOV, .MPG	Movie (digital video)

## **Linked Content**

The concept of linked content is significant for those creating scripts in an environment that includes publishing to a Scala network.

Linked files are not a special type of file. Any type of content file - script, image, digital video, text, etc - can be a linked file. A file becomes a link by being designated as such. Designating files as links is a task normally overseen by someone responsible for administering the distribution of published scripts to Media Players through Content Manager.

The purpose of linked files is to allow the authoring of scripts that include content that needs to be updated from a source external to the Designer publishing process. A linked file is one that, for authoring purposes, functions as a placeholder for a file of the same type that is periodically updated by a means outside of the script publishing process.

A script author uses linked files in exactly the same way as any other content file, and they behave in exactly the same way in playback. The only difference in the context of Designer comes during the Publish to Network process. The linked files are not transmitted as part of the script when Content Manager sends the script to its Media Players, only a reference to the file name is included in the script.

## **Customizing Designer**

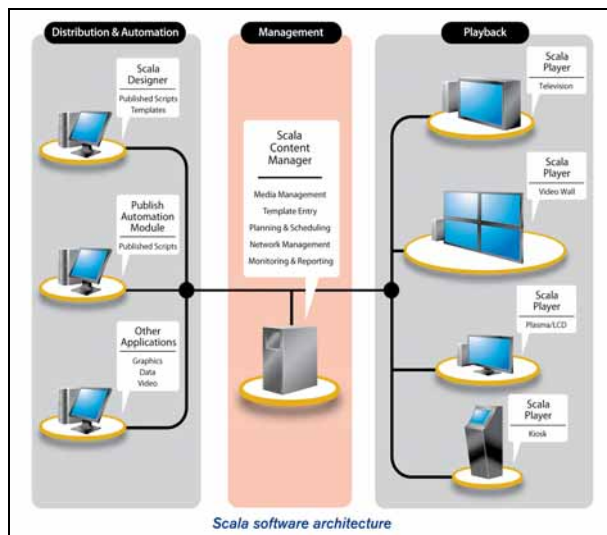
Scala Designer allows you to customize your working environment to suit your hardware setup and your personal preferences. You can adjust the appearance of the Designer user interface, set options to improve performance, choose the time and date format for your national region, and configure Designer to recognize new devices you have added to your system. You customize your Designer using the Options dialog in the Tools drop-down on the Main menu.

## Scala Content Manager

### Introduction

Managing your digital signage content can be challenging, but with the state-of-the-art content management, planning and scheduling tools included in Scala Content Manager, management and control of your network is both improved and simplified - reducing the resources required to control and maintain your network. New template support - plan-based content distribution, timetables, and playlists - keep you in control of your network from wherever you are in the world, from any internet-connected computer.

Content Manager is a server-based application that schedules and manages the transmissions of multimedia content to hundreds, even thousands of digital signage displays from any internet-connected computer. Advertising, news, training or virtually any other visual communication can be easily distributed to Media Players via any standard Windows-based network. Content created using Designer, Template Composer, or industry standard applications can either be routed to the intended Media Player automatically or per your plan.



### System Requirements

The following chart defines the minimum requirements for Content Manager servers:

	1 – 10 Players that receive less than 100MB of content per hour	< 50 Players that receive less than 500MB of content per hour	< 200 Players that receive less than 2GB of content per hour	< 2000 Players that receive less than 10GB of content per hour
<b>Recommended minimum storage</b>	40GB	Raid 1,5; 80GB+ each	Raid 5, 10, 50; 80GB+ each	Raid 5, 10, 50; 80GB+ each
<b>Recommended OS</b>				Windows 2003 Advanced Server; Windows 2000sp4 Advanced Server
<b>Minimum processor power</b>	Intel P4E@2.8GHz+, 800MHz FSB, HT enabled; or Athlon64-X2 3800+	Intel P4E@2.8GHz+, 800MHz FSB, HT enabled; or Athlon64-X2 3800+	Dual-core Pentium-D; Dual Intel Xeon @2.8GHz; 1 x Athlon64-X2@4200+; or 1 x AMD Opteron	Dual Intel Xeon @2.8GHz, large L2/L3 caches. HT disabled; or 2 x AMD Opteron
<b>Minimum RAM</b>	512MB	512MB	1024MB	2048MB

## **Content Manager Key Features**

### **Templates**

Data-driven content templates allow even your least design savvy employee to create great looking displays. Your design team can create templates in Designer, using variable data fields that authorized users can later populate and preview through the Content Manager interface. Now, creating new content, or an entire channel, is easier and faster than ever. This feature is sold separately. Please contact your Scala Certified Partner for more information on availability and pricing.

### **Plan-based Content Distribution**

Based on your channel “plan/schedule” that is easily defined through the Content Manager graphical interface, content is automatically distributed to all designated “points of playback”, saving you time and resources.

### **Timetables**

Define one-time or recurring time slots that employ variable recurrence patterns and start/end dates. As you specify playlists for each time slot, you may automatically view it graphically in the Content Manager. With this graphical, web based, scheduling interface, scheduling your content couldn't be easier.

### **Playlists**

If your content is composed mostly of videos, flash, or static images -- you can create your playlists using the web-based interface in the Content Manager. Of course, Scala Designer still offers a significant and proven advantage for any digital signage deployment by allowing the creation of data-driven templates and other truly dynamic digital signage messaging in less time and at a lower cost, while allowing you to leverage your existing media assets.

### **Cutting Edge Content**

Supports both passive and interactive digital signs or kiosks: 3D rendering & playback engine gives improved performance and visual quality; auto scale content to any resolution (independent of playlists/scripts); flexible data integration and user customization using VBScript, JavaScript or Python

### **Multi-channel Support**

Run two entirely separate channels from a single player, immediately reducing your hardware, OS licensing, and administration costs.

### **Multiple Independent Zones**

Easily create multiple zones with each zone displaying independent content.

### **Player Control**

Group Players by criteria (geography, demographics, etc.); create and plan content “channels” & assign to one or more players or group of players.

### Network Control

Network monitoring, including Media Player “health” status, etc.; remote software updates; allows central management of Player licenses and optional features; powerful browser-based interface for creating & managing playlists

### Smart Content Delivery

Content can be delivered over HTTP/HTTPS and firewall transversal is greatly improved, as are other perceived IT security issues; terrestrial and satellite (multicast) IP-based communication carriers are supported.

### Maintenance Scheduling

Regular hardware maintenance can be added to the plan-based scheduler in Content Manage: once entered, maintenance requirements can be executed at specified times, with minimal disruption to your digital signage network.

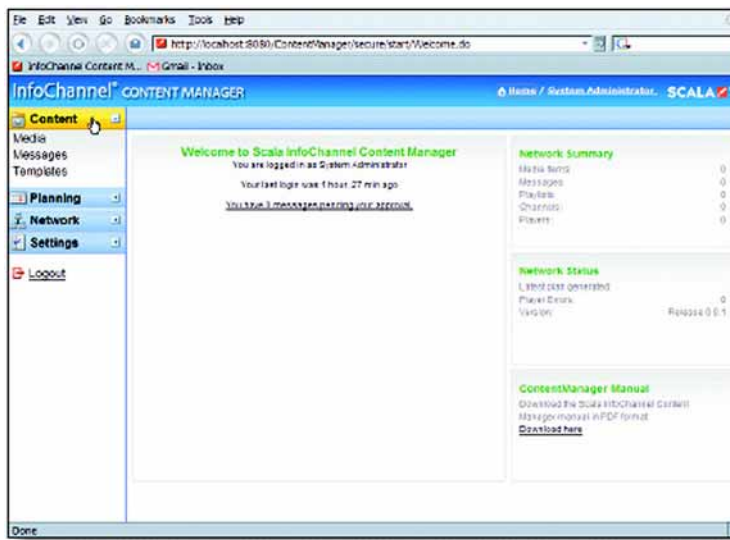
### Roles and Workflows

Role functionality allows users/groups to be assigned different access rights for improved security and workflow.

## The Content Manager User Interface

The design and layout of this interface is created to allow you to manage your project workflow in a streamlined process – working from top to bottom in the list of menu items. In the following sections we will explore some of the major items and follow the workflow process of setting up and generating a plan to a Player.

### The Content Menu



The Content menu is where you will find your Published scripts and other media items. You may also add messages and upload templates through the panels located in this menu.

### Media

The Media button opens the panel that reveals what media items you currently have in your library. When a large library is available, you can sort through the list by file name or simply the date it was modified.

Most of your media will be uploaded to your library via published scripts from Designer. When you open Content Manager and view Media, you will see the Scala Scripts, video clips and images. This will open the Scala Content Manager File Uploader. You can select any files you wish to upload. This action will open a Windows file dialog where you can easily navigate to the location on your hard drive and select the file(s) you wish to upload.

### Searching

If you have an extensive library of accumulated media, channels and players, having the ability to search for something specific instead of scrolling through a list in hopes of finding what you are looking for, can be very helpful.

Content Manager contains a search function in all of the major category panels for Media, Messages, Templates, Playlists and Players. You can use the search criteria to define the kind of item you choose, or you may enter the search term in the space provided and click the arrow on the right to reveal the results in the list panel.

### Media Categories

Categories are labels that can be created and assigned to media items, templates, messages and playlists. These labels may also be used to help organize and search for items that match your desired category. To create and assign categories, first select a media item to view its corresponding Properties. To further define your media organization, you may also create nested sub-categories.

### Media Metadata

Metadata are tags that can contain specific values for each item. Media items as well as messages, channels and players may contain metadata that is used to control playback based on criteria (e.g.: metadata must equal a specified value) or match (two items must have matching values for each metadata tag).

Metadata has many uses. Metadata on media and messages is used when making a smart playlist. Media with metadata matching your criteria will automatically be added to the playlist. For instance, you can add all media with the "xyz brand" so that any new ads will automatically appear in the playlist without having to add them manually.

Metadata can be on channels to put restrictions on which channels can be sent to which players. If you try to assign a channel to a player and their metadata does not match, you will receive a warning popup in Content Manager. This is useful in preventing accidentally sending a channel with the wrong aspect ratio to a player.

Metadata on players may also be used in playlists. When making a playlist, you can add criteria to an item (media, message or sub-playlist) and the item will only play if it matches the player's metadata. You can have several different "language" metadata fields applied to scripts or media items in your playlist, and use that metadata to route the correct corresponding languages to the assigned players. And a programmer using VBScript, JavaScript or Python can access a player's metadata for database queries or to show the metadata on screen as a variable.

### Templates and Messages

You can create and edit messages that can be added to the playlists. A message uses a template that is a Scala script made with Designer, allowing the user to fill in text or replace images.

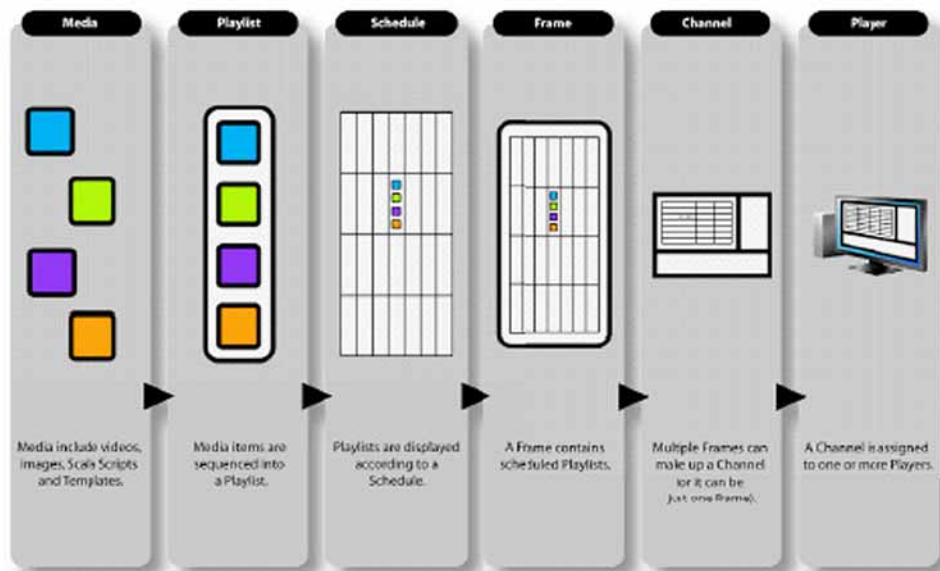


Messages have to be approved before they can appear on a player. If your user account does not have permission to approve messages, you can select the Request approval checkbox to request another user in order for it to be approved. Users with approval permission may view messages awaiting approval and accept or reject them as desired.

### The Planning Menu

The Planning menu is where you will create, manage and schedule multiple playlists and channels to your players. Content Manager will distribute the Channel information as well as the Schedule, Playlists and Content to the Scala Players.

The simple content flow map shown below demonstrates how the process carries information from the Designer-published media to the Player.



The flow of media content through Content Manager is a simple and intuitive process. Media (videos, images and Scala Scripts) are published from Designer or selected inside Content Manager and sequenced in a Playlist. Once a playlist is created, it is assigned and scheduled to a Frame in a Channel that then plays on a Scala Player or series of Players.

## Playlists



If you have several playlists in your library, you may list them in order by Name or Modified date using the Arrange by: button at the top of the panel.

## Sub-Playlists

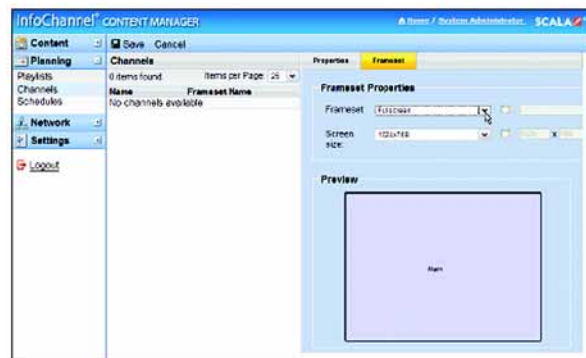
Sub-Playlists are nested inside of each other, so you can create several smaller playlists that can function independently, or grouped together inside a larger, master playlist. When a Playlist is open, you can add any other playlist in your library as a sub-playlist.

## Smart Playlists

A Smart Playlist will allow you to set conditions that filter the desired media that will be added to the playlist. You may also specify transitions between those items, much as you would in a Designer script. It is also possible to set the duration for each on-screen media item.

## Channels

Creating a channel is required to send a playlist(s) to one or more players. Playlists contain the media and scripts, and the channel determines the schedule and screen layout in which the playlists will occur. Additionally, you can have more than one player and more than one channel.



There are several preset options for display types, as well as “Framesets” that divide the screen into segments; each of these are capable of playing a different playlist.

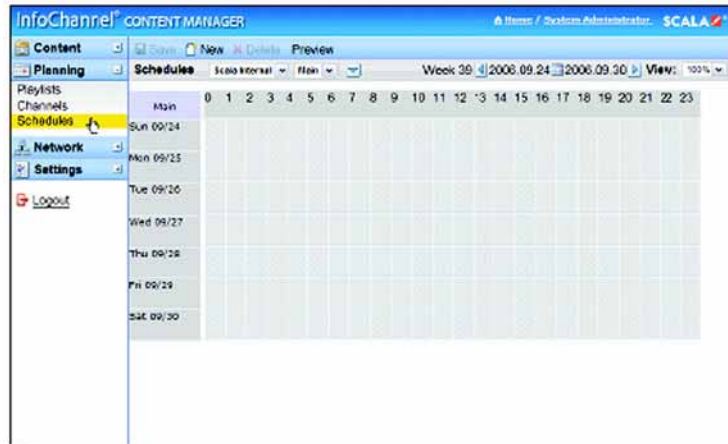
## Frameset Templates

Content Manager comes with several preset “Templates” for Channel Framesets. These are commonly used configurations that include a large selection of display sizes and resolutions. The preset templates that are provided are a great starting point; however, we have also included several customizable options to complement your creativity.

### Schedules

Schedules can be applied to each frame of a channel to define which playlist will play for a given time or date.

You can create a new schedule by click-dragging out a rectangular selection in the calendar grid, to cover the days and times of the playlist you wish to schedule.



### The Network Menu

The Network menu is where you will define the players where your playlists will be displayed. Additionally, this is where plans are generated (either manually or automatically) that will move the scheduled playlists and media to the player locations; as well as monitor the network activities and the health/status of the players on your network.

### Players

Once you have created channels in Content Manager, you may then create Players to display them. When you create players in Content Manager, they must also be configured on the player computer's side to be able to communicate with the Content Manager.

### Plan Settings/Generate Plan

To send your schedule to the player, you will need to generate a plan. The player will look for new plans to be generated on a predetermined schedule. The player will then download the appropriate media and script files it needs from the server. If media files have not been changed, but only a script change was needed, then the player will only download the new script file.

### Network Monitoring, Maintenance and Settings

Creating channels and players, organizing and scheduling your media is only the beginning of what Content Manager can do. You also have the unique ability to monitor your network, server and player(s) as well as having extensive security and maintenance features.

### Workgroups

Content Manager allows you to create, edit and delete Workgroups. Workgroups are a way of associating one or more users to a particular group. Workgroups can then be used for associating content and playlists to a specific group. Sub-Workgroups are created in much the same way as Workgroups are created. Allowing Sub-Workgroups provides additional control of your network.

## About Scala, Inc.

Founded in 1987, Scala pioneered the digital signage industry and today remains the world's largest provider of software for creating digital signage networks, driving more screens than all competitors combined. The company's product line is used for dynamic digital media networks in retail, education, entertainment, government and other industries for diverse applications such as retail advertising networks (retail TV), corporate communications (employee TV), digital billboards, digital menu boards, digital posters, community access channels (cable TV), hotel lobby signage and information channels, petrol pump "toppers", convention centre signage, interactive touch-screens and kiosks, etc.

The company's cutting-edge software platform powers thousands of digital signs around the world including the digital signage networks of Rabobank, IKEA, Bloomberg, Burger King, T-Mobile, Virgin MegaStore, EuroDisney, Kiwi, McDonalds, Warner Brothers, Santiago Airport, Ericsson, The Life Channel, Rikstoto, FuelCast, Repsol, Shell, NorgesGruppen, The Wall Street Journal Office Network and many more.

Scala is today headquartered near Philadelphia, PA and has wholly owned subsidiaries in The Netherlands, France, Norway, and Japan with a direct presence in a number of other locations and countries. Scala's products are primarily sold through an international network of Scala Certified Partners.

### For more information, contact your Scala Certified Partner:

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