Content Manager 11.03

> **Please Note:**
> This table shows the comparison of the new feature based licenses which will become available shortly.
>
> These licenses will supported by Release 11.03 and Scala will inform you when they do become available.
>
> For more information, please see this page, or contact your Scala representative.

Welcome to the Content Manager Documentation homepage for release 11.03. The below sections are grouped to help you find the areas most likely to assist you:

- **Where to Begin** points you at the system fundamentals, or offers an overview of the system changes since the last major release, depending on your history with the product.
- **User Manual** takes you deeper into the online documentation. The links allow you to jump into a specific topic area.
- **Related Areas** takes you to the other products of Enterprise, the prior Content Manager version, or to other versions, depending on your interests.

Keeping your Scala Maintenance Subscription up to date will give you access to the latest updates and upgrades from Scala. These are the dates specific to this release:

- **Scala Maintenance Start Date**: March 1, 2017
- **End of Support Date:** not yet defined.

For more information about maintenance and renewal, click here.

> **Warning:**
> Before making any updates you any component of your Scala Enterprise, please be sure to read Updating Your Network to make sure you are adhering to the proper procedures for making changes to your Scala Enterprise software.

Where to Begin	User Manual	Related Areas
Read These First	- Managing Your Profile - Managing Content - Managing Channels - Scheduling Content - Distributing Content - Managing Network Devices - Using Playback Auditing - Interfacing via the API - Administrating the System	For online documentation related to our other products in this same release version:
- Verifying Technical Specifications - Installing Content Manager - Using Media Formats Supported by Scala Enterprise		- Designer 11.03 - Player 11.03
New Users		To access the prior version of Content Manager:
- Introducing Content Manager - Concept Models - Glossary of Terms - Personas - Getting Started		- Content Manager 11.02
Experienced Users		Looking for something different? Visit our documentation portal homepage:
- What's New - Release and Update Notes		- Scala Enterprise Homepage

> **Download:**
> If you would like a PDF of this Content Manager System Manual captured as of October 26, 2016, please click here.

Other Resources

In addition to this resource, the following are also available:

- Updates show which updates are available for the product(s) you have currently licensed.
- Extras is a resource of information and inspiration, from documentation to examples and more.
- Support provides help through FAQs and a Discussion Forum.
- Services and Training are available to help you get the most out of your digital signage network.

Introducing Content Manager

Scala Content Manager is a powerful, server-based application for digital signage content distribution, scheduling and management that lets you control from one to hundreds, even thousands, of digital signage displays from a single browser interface.

Advertising, news, training or virtually any other visual communication can be easily distributed to **Scala Players**. Content is created using **Scala Designer** or other industry standard applications.

In a Scala Enterprise network, Designer is part of a workflow process, allowing users to create scripts and templates, manage them in Content Manager and play them in Player, which is illustrated by the following diagram.

The Larger Enterprise Ecosystem
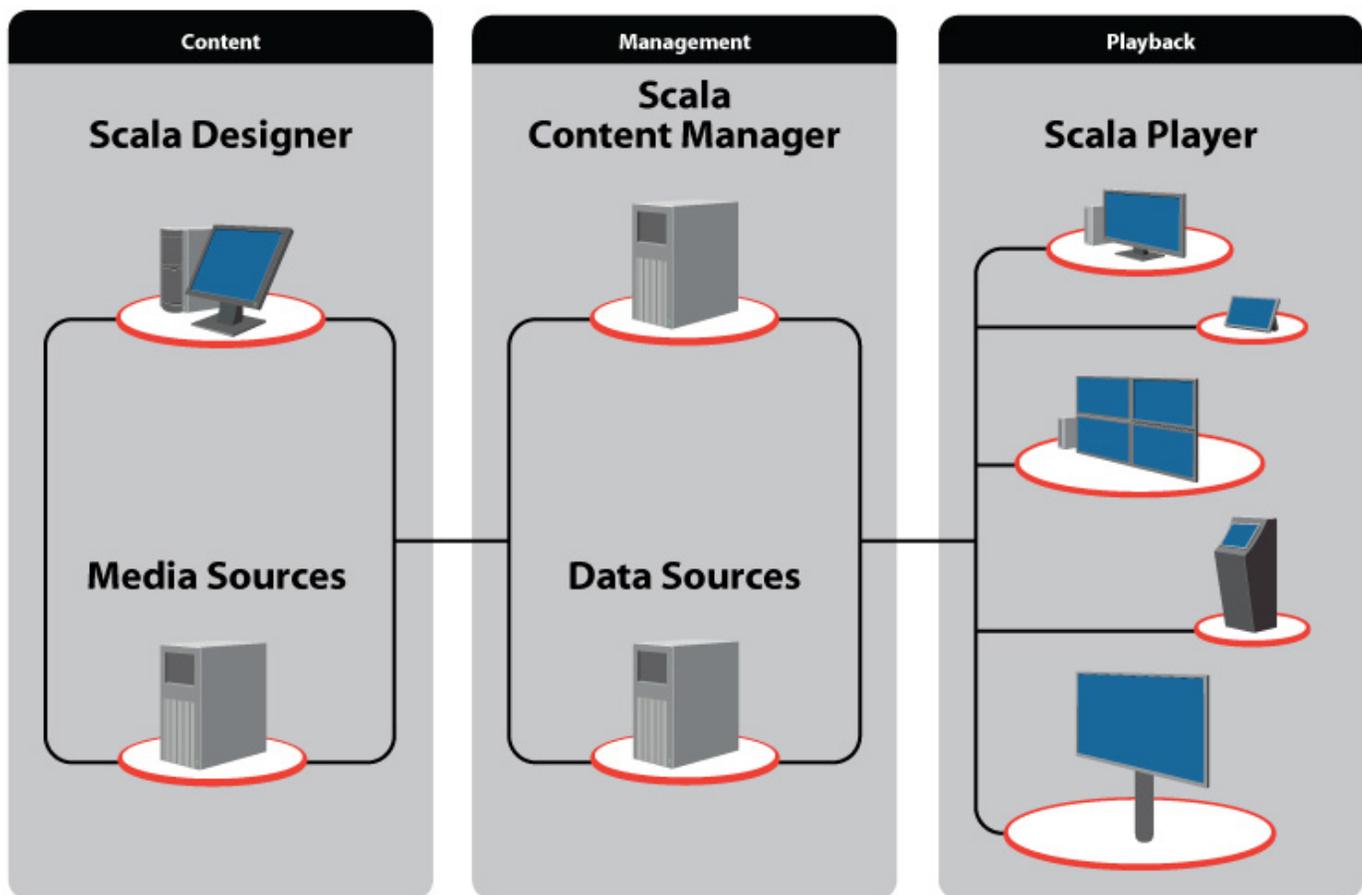
To Learn More About the Basics

The following pages can provide a deeper introduction of Content Manager:

- Domain Model– a quick look at high level flow within Content Manager. This covers both the content flow, and the security interactions.
- Personas– the common user types of Content Manager, what they commonly do, along with the default roles associated with them.
- Getting Started– a basic primer of how to get a simple example of content through Content Manager onto a Player.
- Glossary of Terms– definitions of terms you may encounter while learning more about Content Manager.
- Configuring Server Environments--topics related to prepare for, install, tune or update your server.

What's New in 11.03

> ⓘ **Note:**
> To view what is new in our other Scala Enterprise products, please see What's New in Designer and What's New in Player.

- New License Types
- Alternate Playlists
- Calcluating Playlist Duration
- File Upload Improvements
- Player Landing Page Improvements
- Log File Improvements
- Playback Audit Updates
- SQL Server 2014
- Webclip Background Color

New License Types

> ⚠ **Please Note:**
> This table shows the comparison of the new feature based licenses which will become available shortly.
>
> These licenses will supported by Release 11.03 and Scala will inform you when they do become available.
>
> For more information, please see this page, or contact your Scala representative.

Release 11.03 sees the introduction of feature based licenses as a way of meeting customer demand and business objectives. They are designed to be independent of your playback device's operating system.

For a chart which details each of the new license types and their features, please see the Feature License Functionality Matrix.

Alternate Playlists

This feature enables the user to be able to define a desired behavior for a timeslot when a timeslot or a frame has nothing to play, and the result would be a black screen

Your options are:

- Black (current behavior)
- Transparent
- Alternate Playlist

For more information, please see Editing Playlists.

Calcluating Playlist Duration
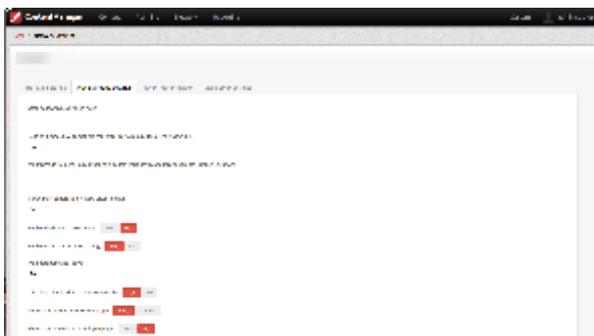
File Upload Improvements

We have sped up the process for the initial ingestion of files by adding the ability for the users to define the:

- Files
- Folder Location
- Categories
- Workgroups (Owner and Shared With)
- Metadata

Player Landing Page Improvements

Links to Player Inventory and Player Health have been added to the Player landing page. This will allow System Administrators to have quicker access to these topics.
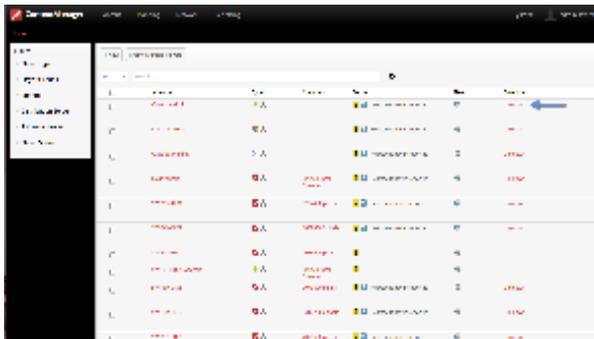
Log File Improvements

The following logs have been added:

- ContentManager-useraction.log
- ContentManager-performance.log
- ContentManager-plangeneration.log

These logs are meant to assist administrators and support teams in better troubleshooting Content Manager. They are included in Content Manager's "Download Logs" option.

Playback Audit Updates

Dynamic polling is now available to increase the efficiency of parsing billing files. The billing log can now be adjusted to dynamically adjust its polling interval based on the processing times of the previous two billing logs.

This feature can be enabled by setting pam.staticPollingMode=false in config.properties and restarting Tomcat. This will enable the feature and change the default behavior from static poll every second) mode.

SQL Server 2014

Windows SQL Server 2014 is now supported by Content Manager.

Webclip Background Color

On the Properties page, the background color of a webclip can be set by using an eight digit hexadecimal value.
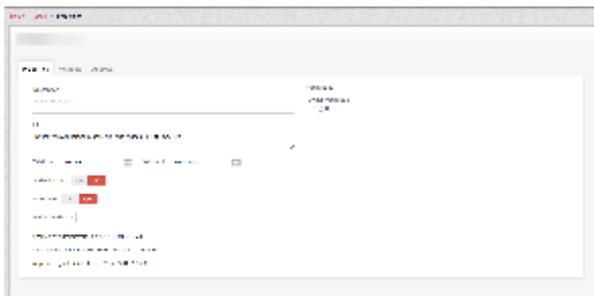
> **For Further Information...**
> - Read the full update notes for complete details on changes made to this release in hotfixes.
> - Start at the Content Manager 11.03 homepage for complete details on Content Manager.

Concept Models

Content Flow Model

The diagram below illustrates the process that moves Content from your Content Manager to its final destination, your Player. An explanation of the terms found in the table, and more specific explanation of the types of Media follow the diagram.
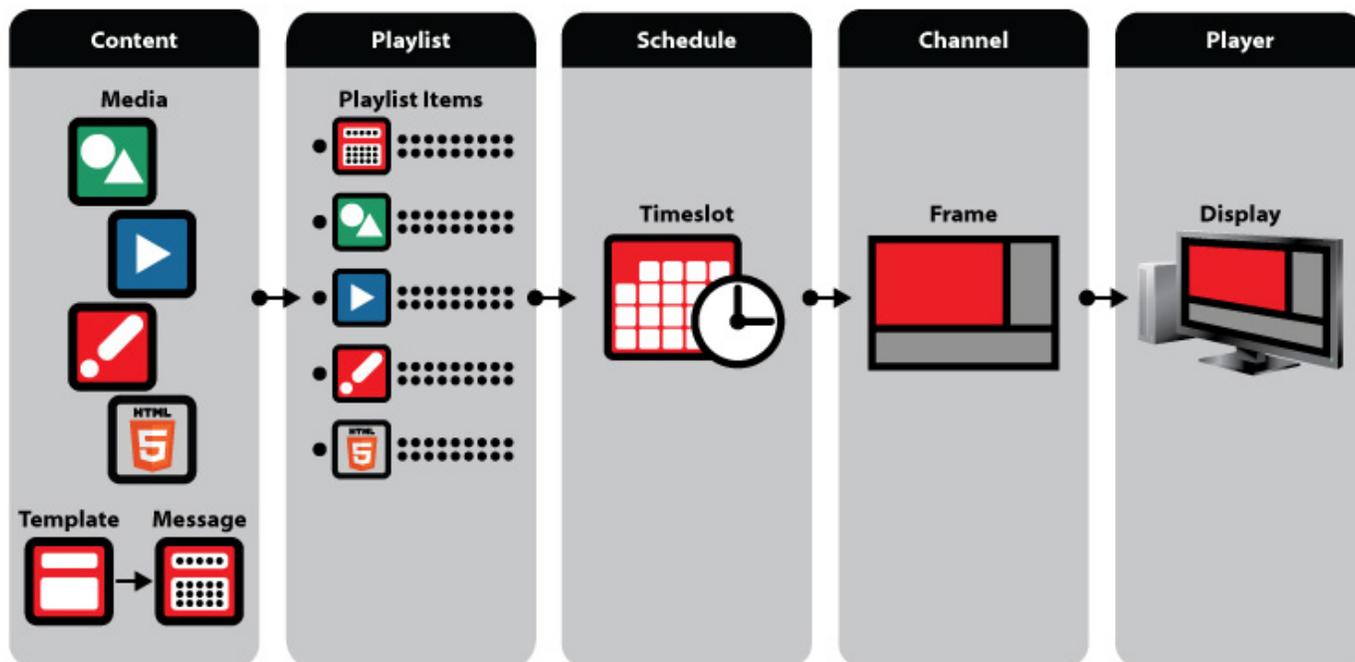
Item	Description
Template	The layout of a page(s) in which a user can change media assets or fill in the text via a simple form.
Message	Filled-in templates that can be added to your content library.
Media	Media is an object like an image, video, scalascript, html5 widget, etc that can be placed directly into a Playlist.
Content	Content is all of the above items, but only Messages and Media can be assigned to a Playlist.
Playlist	Collection of Content with specification around how it should be played. At the most basic level, it will define the sequence of those items, and the length each item appears. Within a playlist, there may be item specific scheduling. Also, Playlist can reference and nest other Playlists within them.
Schedule	The main form of controlling when a Playlist is shown. A schedule contains one or many Playlists.
Frame	Subset of a Channel, and each frame has one or many Schedules assigned to it.

Channel	What the Player is assigned to listen to. A Channel can be broken down into Frames (or is defined as one full frame). This channel frameset defines the screen real estate into smaller sub-chunks, each with its own content stream.
Player	A playback device is called the Player. A Player is "tuned" to a Channel in Content Manager.

Security Model

Security settings determine what can be done by Users. An explanation of the terms found in the diagram follow below.
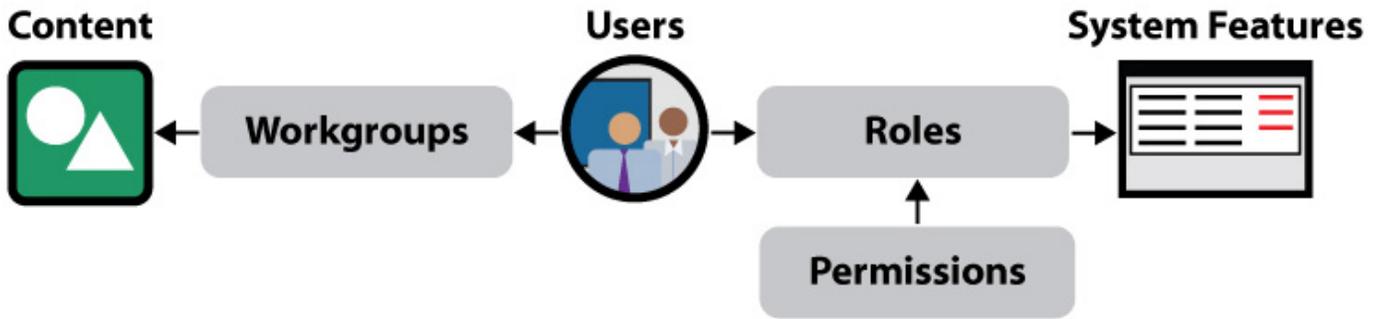
Item	Description
Users	These are the accounts with logins. They are the People who access the system. A user can be mapped to workgroups and roles.
Permissions	Permissions are granular security access settings in the system. A permission defines access to functional features within the software.
Roles	Roles are groupings of permissions that are assigned to Users.
Workgroups	Users are mapped to workgroups. Workgroups are "teams" of people that work together.
Content	A list of media accessible by the User's Workgroup.
System Features	A group of users within a role, have permission to interact with the system in a certain way, across the content they have access to.

Personas

Content Manager, by default, ships with eight default Roles: Administrator, System Administrator, Graphic Designer, Message Editor, Message Manager, Network Manager, Schedule Manager and Viewer. Each section below describes a subset grouping of these roles and provides an overview of how users in these roles interact with Content Manager. These are listed in approximate order of decreasing access within the system.

SYSTEM ADMINISTRATOR

A user in this role is responsible for back-end system management to keep Scala Enterprise running smoothly. This role has access to the totality of Permissions in Enterprise and manages system updates along with user and permission management. The Network Manager default role is a subset of this System Admin role, but is intended to focus on managing and monitoring of Players, ensuring content is playing properly.

CONTENT ADMINISTRATOR

A user in this role is primarily focused is on taking the content created by the Content Editors and managing the distribution of this content across the network to players. There are two subsets of focus within Content Admin: The Message Manager focuses on organizing message content wit h Categories and Templates, while the Schedule Manager handles their distribution into Playlists consisting of Media, Scripts and Messages, and Schedules when the Playlists will appear. They can also view the Network Monitor.

CONTENT EDITOR

A user in this role is responsible for the creating and editing of media and message content to be used by the system. The analogous roles that ship with CM are Graphic Designer and Message Editor. The Graphic Designer's focus is on creating and editing visual content, such as Media,

and its metadata, while the Message Editor's focus is on creating and editing message content using Templates.

USER

This is a user with view only access. Their usage is limited solely to monitor what is being done within the system.

DEVELOPER

A Developer works with the REST API's of Content Manager to customize, for example, an alternative interface or modify the workflow beyond what is available in the standard product. System Administrators can limit access to the API's by creating a separate user account and assigning a role specific to the areas in which the Developer can work.

Getting Started

Saying Hello World!
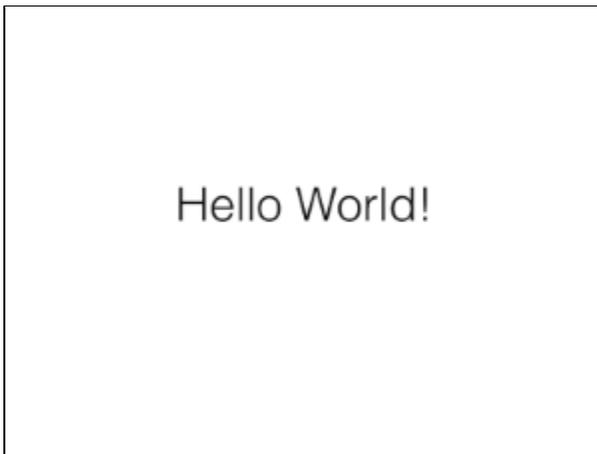
Here you will learn how to get a basic image media item through Content Manager and displayed on a Player. For the sake of this exercise, let's assume you just created the above image and intend to use it for this example. On the page below, we will discuss the basic steps needed to show the content on a single Channel, single Frame Player. Additional details beyond this basic scenario can be found in more detailed sections of this online product release manual.

> ⓘ **Note:**
> There are multiple ways to add media and create schedules for a player. For the purposes of the example on this page, we will do things manually in the simplest form, and accept all the default settings.

Before You Begin: Install Content Manager and Player

Content Manager and Player is typically installed and configured by someone in your IT Department. This getting started guide assumes that this step has already been completed for both pieces. If this has not happened, then refer to Verifying Technical Specifications and Planning Your Installation for guidance. Once you have done that, see Installing Content Manager. In addition to this, we also assume you already know the URL of your server, and have account credentials to login with (otherwise, refer to the first two sections of Administrating Access). For information on specific Players, please see the Player Manuals page.

Player must be installed and configured

Step 1: Logging into Content Manager

When you log in to Content Manager, you will be presented with a Home Dashboard. Its interface is divided into distinct areas for your use.

1. The menu bar, which allows you to access the tools inside Content Manager. These are the options you would most frequently use when working in Content Manager
2. The right side of the menu bar contains menus that allow you to work on the administrative side, both on a global and personal basis. The System menu contains the global options you can adjust, while the administrator allows you to make changes to your own personal settings.
3. These links are the most frequently used areas of Content Manager, gathered all in one place for your ease of use. Clicking on them will take you to the same link you would get to by clicking on one of the links in the top menu bar. The content you see varies, based on user roles and access, information available and tools available within the dashboard will vary. It provides messaging, workflow activities and links to key areas of Content Manager using the links on the dashboard.
4. The Online Extras point you to resources that live outside of the software to aid you in several ways.
5. The News Feed provides you with the latest Scala news. It can be enabled or disabled in the Network Settings menu.

Step 2: Add a Media Object

1. To access the media screen, choose **Content** from the top menu and then select **Media**.
2. Select **+New** and then select **Media Upload.**
3. Click **Add**
4. Find and verify the filename of the content, and then click **Upload**.

A status bar appears in the Menu Bar and upon completion a confirmation status appears.

For a more detailed discussion of adding Media, click here.

Step 3: Create a Frameset

> (i) **Note:**
> This step is optional and can be skipped. Content Manager comes pre-loaded with a selection of pre-configured framesets when can be used for this example instead of creating your own.

1. Go to the **System** and under **Management**, select **Framesets** from the list.
2. On the page that appears, click **+New**.
3. Enter a name for the Frameset, and then click **Create**.
4. This will take you to a page where you can customize the Frameset further, but this can be ignored in this basic scenario.

For a more detailed discussion of creating a Frameset, click here.

Step 4: Create a Channel

Before displaying media in Content Manager, you need to define the layout of the screen. This is done via a Channel, which contains a Frameset that specifies the screen size and the size of the frame(s) in it. A channel can be based on a single frame display or can contain multiple frames, each with their own Playlist.

1. Go to the **Planning** menu and select **Channels**.
2. Select **+New**
3. In the box that appears, enter a name.
4. Choose a frameset by clicking on **Select,** and picking the frameset we previously created or one of the pre-loaded framesets.
5. Once you have chosen a frameset, click **Select.**
6. When you are finished, click **Create.**
7. This will take you to a page where you can customize the Channel further, but this can be ignored in this basic scenario.

For a more detailed discussion of creating a Channel, click here.

Step 5: Create a Playlist

1. In the menu at the top, click on the **Planning** menu and choose **Playlists**.
2. On the page that appears, click **+New**
3. Enter a **Name**, and **Description** (optional)

4. Click **Create**.
5. In the page that appears, go to the Items tab, and click on **Add Media.**
6. Choose the image we added to Content Manager in Step 1 and click **Add & Close**.
7. On the screen that appears, click **Save & Close** to exit.

For a more detailed discussion of Playlists, click here.

Step 6: Create a Schedule

1. Go to the **Planning** menu and select **Schedules**.
2. On the screen that appears, verify that the Channel you created in step 3 above is listed in the left hand column. If not, click **Select a different channel** and find the channel you created, and click **Select** to change it.
3. Click **New**. (*Note: Since you have not selected a window of time on the schedule before clicking new, a 24/7 timeslot will be created by default*). Once you have done this, the **Timeslot Properties** box will appear. The Playlist we created in the previous step should be on this page under Playlist. If it is not, select Change and find it.
4. Click **Create.**
5. Click **Save & Close**.

For a more detailed discussion of creating a Schedule, click here.

Step 7: Add a Player

1. Click on the **Players** link under the **Network** menu in the top navigation bar.
2. Click on the **+New** button at the top of the panel.
3. Select the proper player type and click **Next**.

   The types of players shown will depend on the rights granted in your Scala license. They will be displayed in a list like the one below.
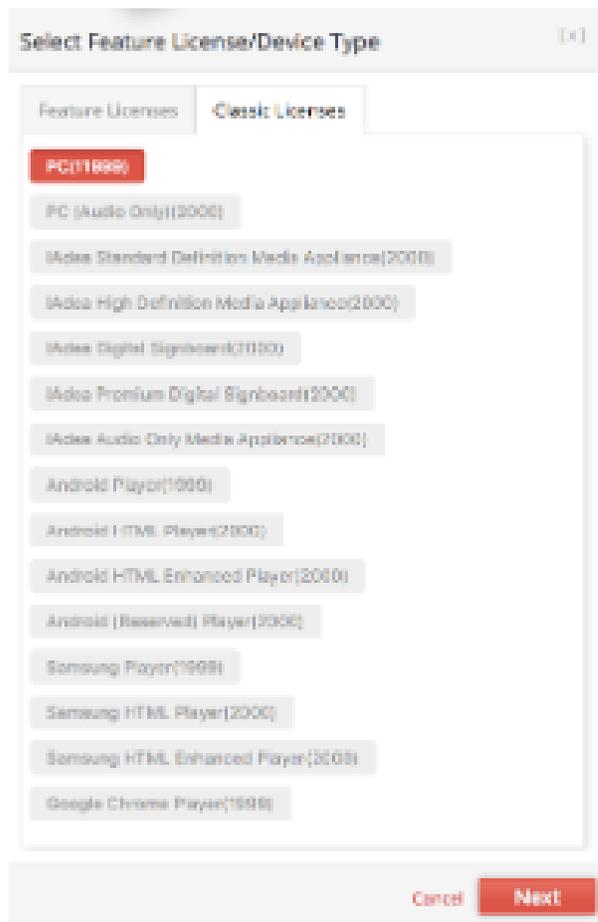
   The full list of supported playback devices changes from time to time.
4. Identify your player by providing a name (and an optional description) for it. Choose a distribution server from the dropdown menu (for this example, select Main- Point-to-Point), and click **Create**.
5. In the **Properties** screen that appears next, assign the Channel you created in Step 3 under the **Channel** field on the right side of the Properties tab, then click **Save & Close** to exit.

For a more detailed discussion of Adding a Player, click here.

Step 8: What's Next?

If you've followed the above steps properly, you will have created a Plan. Once the Player runs a plan, it will pull together the Channel and its Frameset, along with the Playlist and Schedule for the Media we added, and gather it together to execute in the manner we set forth in these steps, which your Content Manager will complete on its own behind the scenes. As a reminder, Player needs to be installed for this process to be completely successful.

Congratulations! Your player should be displaying the "Hello World!" image.

Glossary of Terms

This is a list of the most important, or most commonly used, terms within our manual. Click to expand any word for its definition, along with links to where you can find more information about it.

⌄ API

Application Programming Interface. System for programs to integrate, communicate and share data with each other.

Learn more here: Interfacing via the API

⌄ Approval

Approval status determines whether a given Media Item or Message will play. User can request approval from other users and the approver can accept or reject it.

Learn more here: Managing, or Configuring Content Approval

⌄ Audio Ducking

Function that lowers the level of one audio signal so a second audio signal can be heard. An example of this is an announcement that needs to override a music track.

Learn more here: mentioned when managing Messages, Schedules, or Triggers

⌄ Category

Tags that can be applied to Media, Messages, Templates and Playlists. Useful in organizing content and in the creation of Smart Playlists.

Learn more here: Managing Categories

⌄ Channel

Format of a display including pixel size, aspect and number of frames assigned to one or more Players.

Learn more here: Create, Edit, or Manage Channels

⌄ Channel Variable

A Scala variable that can store values accessible to all scripts running in a given Channel. They are primarily used to control Event Triggers, but have other applications.

Learn more here: Editing Channels, Event Triggers

⌄ Content Folder

A grouping within Content Manager to aid in organizing media content.

Learn more here: Managing Folders

⌄ Distribution Server

The component of Content Manager which handles distribution to Players. A typical Content Manager has at least one Distribution Server.

Learn more here: Managing Distribution Server

Event Trigger

A way to start a specific playlist on a Player as the result of an external input.

Learn more here: Using Event Triggers

Frame

An independent area of content within a Frameset for a Channel. Each has its own schedule of Playlists.

Learn more here: Channels, Framesets

Frameset

The way the display of a Channel is subdivided into independent areas of content (frames).

Learn more here: Creating Channels, Framesets

Log File

Text file that lists events that have occurred with a given piece of software. All Scala programs save log files to help with troubleshooting and verifying activity.

Learn More here: Downloading Logs (bottom of page), Creating Backups, Player Health

Maintenance Job

Task such as receiving a file, rebooting, or updating software. These jobs are created in Content Manager and executed by one or more Players.

Learn more here: Managing Maintenance Jobs

Media

Item of content that can be added to a Playlist. Includes images, video, sounds, Flash, HTML, or Scala Script.

Learn more here: Adding Media, Verifying Formats, Managing Media Images

Message

Type of content in Content Manager where Message Fields in a Scala Template are filled in by a user.

Learn more here: Managing Messages

Metadata

Data can be used to add information about Media (e.g. source, aspect ratio, licensing restrictions) and Players (e.g. location or type of screen).

Learn more here: Media, Player

Non-Scheduled Content

Media files that need to be distributed to Players to be used by other content such as Scala Scripts or Flash files. Not intended to play by themselves.

Learn more here: *Managing Schedules*

Plan

File that summarizes the schedule and content inventory for a given Player. Content Manager generates plan files for each Player on a regular interval, or you can have a plan files generated though a manual request.

Learn more here: Distribution, User Activity, Smart Playlists

Player

Computer or device running software that can communicate with Scala Content Manager to receive and display content.

Learn more here: Creating a Player, Managing Player Groups, Monitoring Player Health

Player Heartbeat

Method used to monitor Player status. Players report in at a specified interval. If they do not report within the configured time, Content Manager sets an error for the Player.

Learn more here: Player Dashboard, Health, and Tuning Content Manager

Playlist

List of one or more items (Media, Messages or Sub-Playlists) which can be scheduled into a Channel.

Learn more here: Creating, Managing, and Editing Playlists

Playlist Item Conditions

Allows items in a Playlist to play or not play based on Player Metadata, Player Name or Display Screen (for two-channel Players).

Learn more here: Smart Playlists, Metadata

Publish Location

Folder on an FTP server or network share that Content Manager can monitor for new or changed files. Any such files will be automatically imported into the Content Manager Media list.

Learn more here: Auto-Importing

Script

Text file with commands that are executed by a program. Define content layout and timing, and then leverage Windows Scripts such as VBScript, JavaScript or Python to add more functionality.

Learn more here: Managing, or Using Triggers

Shuffle Playback

Technique for making the items in a Playlist play in a random order, while assuring that they are all played in equal distribution over time.

Learn more here: Editing Playlists

Smart Playlist

Playlist whose items are chosen automatically from Content Manager's Media and Messages based on specified criteria such as file name, modified date or other metadata.

Learn more here: Managing Smart Playlists

Template

A Scala Script where certain text items or files can be changed in Content Manager by creating a Message using the Template. Any other elements will remain fixed.

Learn more here: Uploading Templates

Timeslot

A schedule entry in a Channel containing a Playlist.

Learn more here: Managing Schedules

˅ Time Trigger

A way to start play for specific content to play at a specific time.

Learn more here: Using Time Triggers

˅ User

Definition in Content Manager that corresponds to the end user of the software.

Learn more here: Creating, Editing, and Deleting Ussers

˅ User Roles

Definition in Content Manager that corresponds to what features within the system are visible to a given set of users.

Learn more here: Managing Roles

˅ Workgroup

Definition in Content Manager that corresponds to a group of users and the media content they can access. Content in other Workgroups are hidden from them.

Learn more here: Managing Workgroups

Managing Your Profile

Accessing Profile Settings

Selecting **Personal Settings** allows you to manage the following personal information: email address, password, and regional settings.
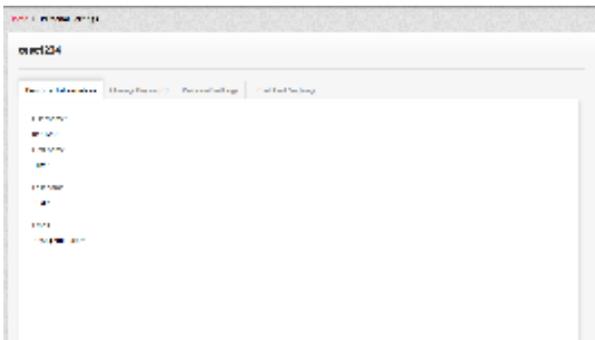
Updating your Personal Information

To manage your account profile specific settings, click on the **Personal Information** tab, which allows you to modify include your first and last name, and your account contact email address.

> ⓘ **Note:**
> If you are using LDAP or Active Directory to administer Users, Roles and Workgroups, then some options may be disabled.

> ⓘ **Note:**
> The Administrator username is assigned by the system and cannot be changed by the user.

Modifying your Password

Modifying your password can be done in the same way by clicking the **Change Password** tab. Be sure to check the box next to "Change my

password" and create a password that is at least eight (8) characters in length. It is also important that your password meet any requirement (e.g., having a certain amount of letters, numbers, special characters. etc.) your IT department may have in place.

Selecting your Region

Regional settings can be changed by switching to the **Regional Settings** tab and choosing your default language from the drop down menu that appears.

Editing your Email Notifications

Email notifications are in place to let you know when there is an object for you to approve. You can access this by clicking on the **Email Alert Settings** tab. Switching the appropriate button, either yes or no, allows you to set the frequency of emails you want to get from your Content Manager.

Switching your Network

When logging into Content Manager with a user account that is associated with multiple Hosted Networks, you will return to the network you were last logged into.

Switching between networks is as easy as simply selecting the network required from the dropbox presented.

Managing Content

You will to need to ingest your content into Content Manager, either manually, or through an automated process. A good set of tools to manage this content is also provided.

An approval workflow is available in Content Manager that allows you to ensure that only validated content is played back on your system.

Playlists are the final layer of sequencing your content, which can then be scheduled for playback.

The topics discussed in this section include:

- Organizing Your Content
- Adding Media
- Managing Media Images
- Uploading Templates
- Managing Messages
- Managing Content Approval
- Managing Playlists
- Auto-Importing of Content

Organizing your Content

Organizing and properly managing your content is critical in creating a library that is easy for your team of users to leverage. Folders, categories, and metadata are an essential part of making content that can be more easily searched, organized and aids in accessibility.

The topics discussed in this section include:

- Searching for Content
- Managing Folders
- Managing Categories
- Managing Media Metadata

Searching for Content

Search can be accessed by clicking on the **Content** menu in the top navigation, and then selecting the category (Media or Templates) in which you would like to search.

Using The Search Function

To perform a search, enter your criteria in the search bar found above the media list. Searching can be done in one of two ways:

1. Setting the filters on the left hand side to limit the types of files you are seeing. A more detailed explanation of the filters is found below.
2. By using the search bar at the top of the page. If you type at least three characters, the search function will start attempting to auto complete your search with best matches.

> **Tip:**
> Auto-complete search is not refined by your current filter settings. If you select an item from within the autocomplete feature that is not within your active filters, then your filters will be cleared to allow the selected search results to be displayed. However, if you select a filter(s) and then search for an item already in the filter's domain, the filter(s) will remain active.

Refining Your Search with Filters

Searches for Media and Templates can be narrowed through the use of filters.

Media Filters
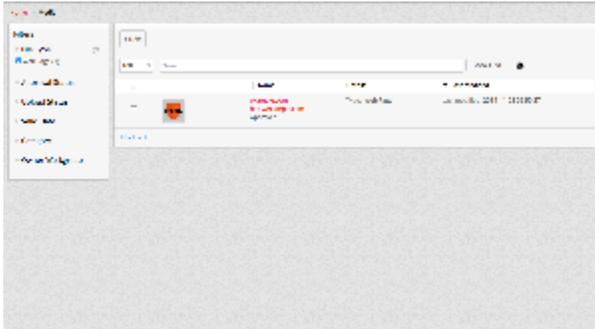
Searches for media can be refined further via the following filters on the left hand side of the page:

- **File Type:** Message, Image, Video, Scala Script, Web page, Widget, flash, audio, Windows Script and file extensions, such as .xml, .xls and .pdf.
- **Category:** Not Assigned or Any Assigned is always listed by default. Any categories you add to the system will appear here as well.
- **Workgroup:** Lists the workgroups you have created in Content Manager. There are two sets, one for the Owner workgroup and one for the Shared workgroup.
- **Approval Status:** Options include needs approval, approved, rejected and draft.
- **Valid Date:** Either listed as expired, expire in a year, expire after a year and current (never expires).
- **Template Used:** Lists the templates in your Content Manager.
- **Folder:** List of your destination folders for content.
- **Upload Status:** Current downloads in progress. This could be helpful in monitoring large file downloads.

The count of the number of objects that are in each filter will be visible next to the filer name.

Template Filters
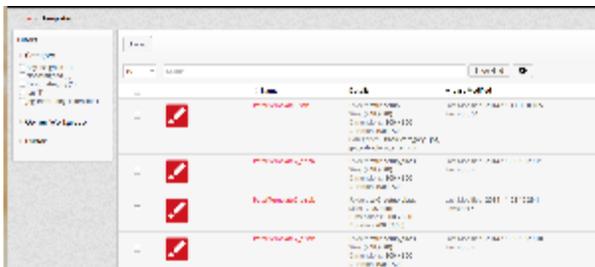
Searches for templates can be refined further via the following filters on the left hand side of the page:

- **Category:** Limited to Not Assigned or Any Assigned.
- **Workgroup:** Workgroups you have created in Content Manager.
- **Folder:** List of the your destination folders for content.

The count of the number of objects that are in each filter will be visible next to the filer name.

Managing Folders

Folders are an easy way to organize your media library and are simple to create.

Creating Folders

To create a new folder:

1. Clicking on **System** in the upper right hand corner of Content Manager.
2. Under **Management**, choose **Folders**.

3. On the screen that appears, click **+New.**
4. Enter a name for the folder.
5. Click **Create**.

To create a sub-folder:

1. Find the folder you want to create a sub-folder under.
2. Click on the red + next to that folder.
3. Enter a name for the folder.
4. Click **OK**.

Deleting Folders

To create a new folder:

1. Clicking on **System** in the upper right hand corner of Content Manager.
2. Under **Management**, choose **Folders**.
3. On the screen that appears, click the box next to the folder(s) and/or subfolders(s) you want to remove and click **Delete**.
4. Verify your deletion by clicking **Proceed**.

Managing Categories

Categories are way to manage your content and are simple to both create and maintain.

To create a category, you must get to the Category screen. This can be done by clicking on **System** in the upper right hand corner of Content Manager, and under **Management**, choose **Categories**.

On the screen that appears, click **+New.** Enter a name for the category and click **Create**.

To create a sub-category, click on the red + next to the name of the category for which you want to create a sub-category.

To edit a category, check the box next to its name. You will be given the option to either select properties or delete. Selecting Properties will only allow you to change the name. If you make any changes, click either **Save Changes** or **Save and Close** once you are done.

To delete a categor(ies), select the one(s) you want to remove, and click **Delete**. You will be asked if you are sure you want to delete the category. If so, click **Proceed**.

You are allowed to delete multiple categories, but you must edit the properties of categories individually.

Managing Media Metadata

The primary usage of media metadata is in creating **Smart Playlists** where media is automatically added to a playlist based on matching selected criteria. You can create Smart Playlists by using the metadata to help create conditions in the **Properties** page of a particular playlist.

```
Example: mediaitem.title—> starts with-> 123
```

In this example, the condition is using the metadata for the filenames to find objects whose name contains 123.

Adding Media Metadata

To add media metadata, do the following:

1. Under the **System** menu, choose **Management** and select **Media Metadata**.
2. Click **+ New** at the top of the page.
3. In the box that appears, enter a name and choose both the data and value types and click **Create** when you have finished.
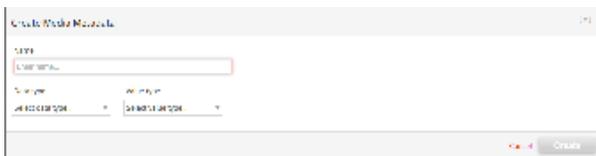
There are three data types:

- **String**: Simple Text strings that can be entered as any text value or restricted to a "pick list."
- **Integer:** Whole Numbers.
- **Boolean:** Also known as logical (true/false represented as Checked/Unchecked). Are **always** "any" value.

There are two value types:

- **Any**: Can be of any value.
- **Picklist:** Can only be chosen from a list.

Metadata values can be sorted either in ascending (A to Z) or descending (Z to A) order in the menu above the list of metadata. They can also be dragged and dropped into your the order of your choosing as well.

You can also edit the properties of the metadata (only the name is editable) and delete them. Selecting a media metadata value by checking the box next to it allows you to edit the properties of the value or delete it. Multiple editing of properties is not permitted, but multiple values can be deleted. If you choose to delete media metadata value, Content Manager will confirm whether or not you want to remove the selected item(s). Click **Proceed** if this is the case.

Adding a Picklist

To add a new picklist:

1. Go to **System** and then choose **Management**.
2. In that menu, select **Media Metadata**.
3. Click on **+New** at the top of the screen that appears.
4. In the screen that appears, enter a name and choose either **String, Integer or Boolean** as the **Data Value Type.**
5. Under **Value Type**, choose **Picklist**.

Adding a picklist, allows you to create Smart Playlists using the metadata, such as in the example at the beginning of this section.

Adding Media

Before uploading media it may be helpful to read the following pages:

- Using Media Formats Supported by Scala Enterprise
- HTML Programming Guidelines

Uploading assets into the media library is one of the fundamental tasks you will need to perform. Your media will be used later when creating either playlists or a message from a template.

Media and data files may be uploaded into the media library of Content Manager using any of three methods:

1. Drag and Drop
2. Browse to the file and upload manually
3. Using an automation tool to ingest files from a Remote Publish Location.

This section will concentrate on the first two methods to upload content.

To access the media screen, choose **Content** from the top menu and then select **Media**.

Using Drag and Drop

Drag and drop is the easiest method for uploading content.

1. Select files for upload
2. Drag and drop files into the window.
3. A dialog box appears requesting you to select a folder (if required).
4. Click **Upload**.
5. A status bar appears in the Menu Bar and upon completion a confirmation status appears. You are able to continue working while you are waiting for uploads to complete.
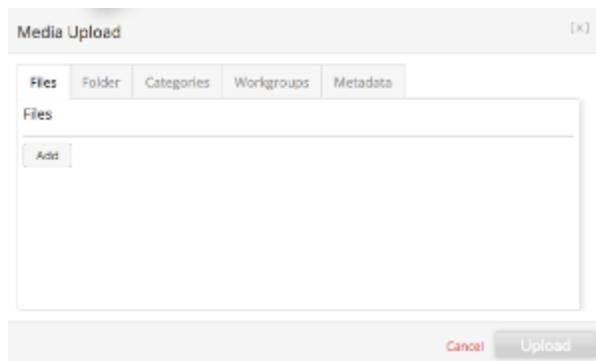
> ⓘ **Warning:**
> Closing your browser will terminate uploading files that have not yet completed

Using Media Upload

If you are uploading media manually,

1. Select **+New** and then select **Media Upload.**
2. Enter information for the following parameters:
     a. **Save To:** Optionally select the folder in Content Manager to upload to.
     b. **Add:** Browse to the files directory and select the files to be uploaded.
3. Once you have filled in the necessary data in the Save To and Add boxes, select **Upload**.

A status bar appears in the Menu Bar and upon completion a confirmation status appears. You are able to continue working while you are waiting for uploads to complete.

Using Other Methods

In addition to uploading media, the **+New** button also allows you to create new content by using:

1. A message which is a completed filled-in Template
2. A Web Page

Creating a Message from a Template

To add a message:

1. Click on the **+New** button
2. Select **Message.**
3. Select the template required and click the **Next** button.
4. Enter the Name of the Message and click the **Next** button.
5. You are presented with a dialog box for you to complete based on the criteria set by the Template Administrator. The Create button will remain disabled until all required fields have been completed. Click **Create** once you complete the required fields.

6. You are then taken to the preview tab of the message. Here you are able to see the preview of the message and make additional adjustments including setting Properties and Metadata for the message.
7. Click **Save** or **Save and Close** if you have made additional changes.

Creating a Web Page

1. Click on the **+New** button and select **Web Page**
2. Enter the name and URL, and click **Create.**

External Source

This option can only be used on subset of players that support external video sources, such as the Samsung SSP Player. To enable this feature, you must first modify the features.xml file.

> ⓘ **Note:**
> Not using one of these specific subset of Players may cause issues.

Using Media Formats Supported by Scala Enterprise

> ⚠ **A Word of Caution:**
> The information on this page will help to ensure that your contact will be capable of playback on your device. They are guidelines which relates to Scala's most common supported format types for Content Manager and Designer.

Images

Supported Formats

The following formats are currently supported: BMP, GIF, IFF, JPEG, PCD, PNG, Tiff and WMF.

AnimGIFs are supported, but the color palette is only 256 colors.

- HTML5 animation will work as long as the webclip is not very large (1920x1080).
- Animated PNG is not supported.

JPEG and PNG are most commonly used. Some guidance on them includes:

- **PNG** is better for line drawings, text, or anything where exact pixel replication matters, or something else, like a very small images. PNG is also the only choice if you need an alpha channel. This lets you have areas that are fully or partially transparent.
- **JPEG** is a good choice for photographic imagery, but is has lossy compression. That is, it is designed to throw out photographic details that the human vision system does not generally perceive, and yields MUCH better compression than PNG for that type of image. It should also be noted that Scala does not support lossless JPEG files.

Recommended Sizes

Thinking ahead as to how and where your images are going to be used is key. While Scala products contain display options and scaling algorithms, it is recommended that you create content at the size required for playback. Pre-scaling is more efficient on a number of fronts including Data Storage, Data Transfer and Decoding.

For example many smartphones have 16 Megapixel Camera's which typically produces 4920x3264 pixel image which is great if you want to ultimately print the image at 300dpi, but when you display this image on a standard HD screen (1920x1080), most of the pixels are literally thrown away as the image is scaled down, which may cause pixelation.

By contrast, images taken from your website will often need to be scaled up and may become blurry if they are scaled too much.

If you need to consider scaling, then try to keep to a factor of 2 as this tends to be more efficient and avoid scaling by more than a factor of 4, up or down.

Background or full-screen images should be as close to the target screen size as possible. Common screen sizes include 1280x720, 1280x768, 1360x760 and 1920x1080. Foreground images such as photos, products or logos, should be matched to the size the image will actually appear on screen. If you don't know, aim for 1/4 to 1/3 of the screen size.

Recommended Color Depth

Typically 24bit, plus alpha channel (if required).

RGB encoded files are supported, but almost all JPEG files that are YUV (color model that more closely represents the human perception of color. *Y* is the brightness components while *U* and *V* are the color components. work with Scala software.

JPEG and TIFF files that are CMYK (process four, color four model) must be converted to RGB encoded.

Music and Sound

Supported Formats

The following formats are currently supported:

- **WAV**: May give better results for looping sounds on a low-end player system (other formats may pause between loops).
- **MP3**: Format of choice.
- **WMA**: Windows Media Audio. It is an audio data compression technology developed by Microsoft. The name can be used to refer to its audio file format or its audio codecs. It is a proprietary technology that forms part of the Windows Media framework.

PC Players also support .m4a for H264/AVC (AAC in an MP4/MOV container).

As with audio in video clips, try to find the best encoding quality at the smallest file size. Similar encoding values can be used: 192-224 Kbps CBR, 44 KHz.

You can create Audio Playlists that can play in the background of your Channels.

Multichannel Audio

The PC Player supports AAC in an MP4/MOV package and with Windows Media (WMV+WMA). For example, an H264 video with a 5.1 AAC audio in an MP4 package.

HTML

For a more detailed explanation of our HTML content development guidelines, click here.

Supported Formats

There are two methods by which Scala's Web Clip can display HTML/HTML5 which allows you re-purpose existing web content.

- **HTTP URL**: Simple URL that lets you display a web page. This requires a live Internet connection on the Player. The page can be cropped and zoomed as well.
- **HTML Widget**: Self-contained web content including HTML, CSS, JavaScript, etc. in a single .wgt file. This has the benefit of being locally stored so it doesn't require an Internet connection, but it may pull content from the Web as well.

Additional Web Clip configuration options include:

- View Size lets you control the dimensions of the "Browser", which can then be cropped, scaled, rotated, etc.
- Alpha channel transparency can be enabled if a background color is not specified.
- Interactivity and scroll-bars can be turned on and off.
- HTTP Basic Authentication for URLs.
- Using ScalaSetVariable to create a ScalaScript variable. This will allow you to create more dynamic WebClip content, by making live and updatable.
- Ability to add a background color (hexadecimal format), which is added in the plan.xml file.

Data can be shared between Scala's Scripting environment and HTML using the scala.js JavaScript library. This has a function to read any Scala variable, as well a function to allow Scala to wait for a Web Clip to signal it is ready to end.

Designer does not provide multitouch support for Webclips. We do not support touch input coupled with display rotation performed by Scala, or webclips rotated in Scala Script.

> ⓘ **Note:**
> Scala supports HTML by leveraging the Chromium Embedded Framework (CEF), which is essentially a subset of the source code of Google Chrome. This means that content supported by a current Google Chrome browser will not necessarily work in Scala's Web Clip since CEF does not contain all of the features found in Google Chrome. CEF also does not expose all browser features, nor does it include proprietary components that are not redistributable (like the Adobe Flash plugin). Release 11.02 uses Chrome version 56.0.2924.76 of this framework.
>
> There are some performance limitations inherit in the framework that do not effect the desktop version of Google Chrome. The performance limitations will vary based on how powerful the underlying computer is. The performance will also vary over different software versions as Google, Scala, and the CEF team make improvements.

Flash

If you have Flash media that you need to use, please be aware that Scala Enterprise only supports Flash through version 10.3.x (e.g. 10.3.183.90) due to issues with significant memory leaks caused by Flash. You might still choose to leverage your older Flash media assets, but we advise shifting to a different media format moving forward.

There are two kinds of files you will see related to Flash: SWF (Shockwave Flash) and FLV (Flash Video). SWF is the file format published by Flash authoring programs for playback in browsers or programs like Scala. FLV is only supported by SWFs (i.e. not played directly). A SWF can programmed to play FLV files, typically using FlashVars to tell it the path or URL to the file. The Flash authoring program even comes with a variety of "players" with different options. You can also embed FLVs inside a SWF and publish it as a single SWF.

Both FLV and SWF support alpha channel, which allows Scala users to create videos with alpha channels. Typically the source file is a QuickTime .mov file (which also supports alpha). Convert that to FLV, and either embed in a SWF of make a SWF player. Unfortunately, playback is not very smooth, especially at larger pixel sizes. Another drawback is that it is currently the only way to do video with alpha.

Flash elements have the following options in Designer:

- **Quality**: controls the visual quality setting of the Flash display engine.
- **Interactive**: Select to allow this Flash to receive keyboard/mouse input.
- **Mode**: Controls the "Window Mode" property of the Flash clip. Opaque mode hides everything underneath the Flash clip. Transparent mode enables alpha-channel transparency.
- **Flash Variables**: Lets you specify text that will passed to the Flash file through the FlashVars method. Useful for certain advanced Flash files that can take parameters for Actionscript code.

Scala relies on the Flash Player ActiveX installation, the same as would be used for Internet Explorer. Multi-touch is supported, but requires Windows 7 operating system.

> ⊘ **Warning About Adobe Flash:**
> Scala Enterprise only supports Flash through version 10.3.x (e.g. 10.3.183.90) due to issues with significant memory leaks seen in newer versions of Flash. You might still choose to leverage your older Flash media assets, but we advise shifting to a different media format moving forward.

Video

Scala currently supports the following video formats: MPEG 1 and 2, WMV and H.264 compression (MPEG4 part 10). MOV files are supported

provided that they have H.264 compression. Apple ProRes 444 (AP4H) within a MOV container is also supported. Please note that Scala does not support the other Apple ProRes video formats.

MP4 and MOV are container formats for audio and video streams. They are a bit like an envelope for postal mail. You can put different types of stuff into an envelope (bills, checks, advertisements, birthday cards, handwritten letters, etc). Like an envelope, MOV and MP4 (and .AVI for that matter) has little to do with the letter or bill or whatever you put inside it.

If you are using H.264/MPEG-4, please be aware there are different levels in bitrate and resolution and profiles (features and capabilities) that can be used when encoding video. Additionally, the audio track should be in AAC (Advanced Audio Coding) format.

> **Note about Apple ProRes 4444:**
> This video format offers a per pixel alpha channel enabling the overlay of video on top of your content.
>
> Apple ProRes 4444 files intended for playback in Scala Player need to use "premultiplied alpha" color values (sometimes called associated alpha).
>
> Audio should be AAC.
>
> Because this format is decoded in software, the CPU costs of decoding AP4H are quite high compared to equivalently sized H.264 files. Even when AP4H files are encoded to modest bitrates suitable for playback, they still require higher performance PCs to play them. We recommend encoding to a bitrate suitable for real time playback, and typically 1920x1080 30fps in the 30-40Mbps range work well.

For those using the Linux Player, the .swf, .mpg, .mov and .wmv extensions will not be supported.

Bitrate

Try to find the lowest bitrate that delivers acceptable quality. The following settings should yield acceptable quality with minimal compression artifacts. Feel free to experiment. Lower bitrates will have more visible artifacts. Higher bitrates may stutter if the playback hardware is not powerful enough.

General recommendations (WMV/H.264):

- SD 480p: 4-8 Mbps
- HD 720p: 8-12 Mbps
- HD 1080p: 16-20 Mbps
- 4K 2160p: 30-40 Mpbs

Bitrate Type

There are two basic types of bitrate settings:

1. **Constant Bit Rate (CBR)** offers smooth consistent playback and is the preferred bitrate type. However if the content has lots of motion, it could result in visible compression artifacts. Using 2-pass encoding can help.
2. **Variable Bit Rate (VBR)** achieves higher image quality by adjusting the data rate based on the scene. It requires more CPU resources during playback and may cause stuttering in other on-screen elements such as crawls. Try to keep the variation range small by setting the target and maximum bit rates close together.

Profile and Level

Most encoders let you choose something called a profile and a level. These are pre-set categories that specify limitations on resolution, compression and bitrate.

General recommendations (WMV/H.264):

- SD 480p: Main Profile, Level 3.1
- HD 720p: Main Profile, Level 3.2
- HD 1080p: High Profile, Level 4.1
- 4K 2160p: High Profile, Level 5.1

Use Main Profile, High Level for HD MPEG 2.

Additional Encoding Tips

- Pixel Aspect: 1:1 (square).
- Fields: Progressive (ie: not interlaced).
- Closed GOP.
- For H.264 encoding, use CAVLC (not CABAC) for best software decode performance.
- Key Frames: Every 1 sec (30 frames).
- Frame Rate: 30 fps NTSC, 25fps PAL.
- 29.97 fps is acceptable for NTSC.
- 60 fps possible with high performance PC.

- **Audio**: AAC 192-224 Kbps CBR, 44KHz or no audio at all if the screens will not have sound or no audio was in the source.

ⓘ **Note:**
If the encoded frame rate isn't a match or multiple of the screen refresh rate, you may see stuttering on some videos, especially on horizontal motion. For example, content encoded 24 fps may stutter on screens that operate at 50 or 60 frames per second. This can be avoided by re-encoding the video with a frame rate that is equal or an even multiple of the screen. For example, 30 fps for a 60 fps screen.

⚠ **A Word of Caution**
While the information below is listed under Content Manager, it is supported by Scala Designer.

Streaming Video

Scala PC Players support playback of streams in the following formats:

- **H.264**: Transport streams may be over RTSP/RTP.
- **MPEG-2**: program streams and transport streams can be over RTSP/RTP

These streams may be live ("joined in progress") or on demand, and are either unicast or multicast.

Supported Streams

RTP

RTSP and raw SDP file initialization of:

- UDP single cast and multicast/or TCP RTP streams of
  - H.264 video
  - MPEG-2 video
  - ATSC MPEG-2 transport stream, single program
  - AAC audio in MPEG-4 generic package (not LATM package)
  - MP3 audio
  - MPEG2 audio

MPEG4 part2, HEVC, or other video encoding over RTP are not supported. As far as audio is concerned, Scala supported AAC in an MPEG4 generic package. AAC in an LATM package is not supported as the result of a significant compatibility issue.

IPTV style

Transport stream over UDP single cast and multicast where transport stream contains:

- ATSC compliant MPEG2 video, single program
- ClearQAM/OpenCable compliant MPEG2 video, single program
- partial support for ATSC H.264 video + AAC audio (works with in limited testing with limited streaming devices), single program

Broadcast ATSC typically contains AC3 audio, Scala does not currently ship an AC3 decoder because of patent licensing restrictions for AC3 (Dolby Digital). We have successfully tested experimental builds of FFMPEG that contain an AC3 decoder as well as the LAVFilters audio decoder with AC3 decoding.

Windows Media Streaming is currently supported, but we can not deeply test it at this time.

The following are not supported:

- RTMP streaming
- HLS (HTTP live streaming)
- DASH
- HTTP download.
- Audio-only streaming

Additionally, Youtube is not a streaming standard.

Scala Scripts

Designer can be used to create dynamic, rich content. The Scala Scripts designer produces can be published directly to your content Manager or may be collected into a .SCZ and uploaded to Content Manager.

- Scala Script - Non interactive
- Scala Script - Interactive
- Scala Templates

Fonts

Scala supports TrueType and OpenType fonts installed in the standard Windows location. TrueType is the preferred format.

Designer has the ability to embed fonts within Scala Scripts when publishing so those fonts don't have to be installed on the Players. However, some fonts have licensing restrictions that prevent distribution to other computers. Designer warns if you select a font that cannot be embedded in a script. In that case you need to manually install the font on the player. Otherwise the player will substitute a default font. The following is true about Open Type:

- Support is available for Scala Enterprise.
- Fonts with PostScript outlines must be pre-installed on the Player because they cannot be embedded.
- Fonts with TrueType outlines can be embedded if their licensing permits it.

TV Capture

Scala supports a number of analog SD TV Tuner and Capture cards that use WDM APIs. These typically have antenna, composite and/or S-Video inputs. Live video can be displayed from devices such as DVD players, cameras or set-top boxes.

Scala also supports the following HD capture cards:

- The Hauppauge ImpactVCB SDTV/Composite Video Only)
- The BlackMagic Intensity Pro will only work with motherboards that have NEC/RENESAS USB3 controllers. This has been verified by the manufacturer.
- The Datapath VisionAV
- BlackMagic Intensity Shuttle USB3 is available, but have only been verified by the manufacturer to work with HP Z420, Z620 and Z820 systems. They also work with HP Z400, Z600 and Z800 desktops systems, and also the MSI GE630 notebook, but those have been discontinued. It may work with machines not listed here, but only the ones listed have confirmed to work by the manufacturer..

These cards can accept a high-definition component video signal at 720p or 1080i resolution, and can display unencrypted HDMI at up to 1080p/1080i respectively. If you have an HDMI video camera, Scala supports RTSP(MPEG-2 & H.264) and WSMS(HD-WMV9 & VC-1) TCP/IP video streaming.

Licenses for TV Tuner EX are included for both Designer and PC Players. TV Tuner EX will need to be configured correctly, and activated in the Player Property setup in Content Manager that is expected to display the signal.

You do not need to have the capture device connected, as a place-holder element will be displayed. Designer allows you to position and size the element however you like, even add transitions. Once published, the script can be sent to Players.

> **Note:**
> Scala does not support Digital cards that use BDA APIs, however there are some hybrid mPCIe cards that may work since many use WDM APIs for SDTV purposes.
>
> Scalability testing is recommend for all cards, when displaying the TV Capture for extended periods of time during playback. Particular emphasis should be placed on checking for: Loss of signal and/or audio becoming unsynchronized.

Scala supports RTSP (MPEG-2 & H.264) and WSMS (HD-WMV9 & VC-1) TCP/IP video streaming.

Scala Elements

Scala has the following built-in element types:

- **Text**: Can be literal, variables or data fields.
- **Text Crawl**: From news "tickers" to vertical rolls.
- **Text Box:** Constrains text to a limited region.
- **Drawing Tools**: Box, Oval and Line.
- **Buttons**: Many elements can be used as interactive buttons that can link to other pages, set variable, play sounds, etc.
- **Clips**: Can be any kind of a Clip, including Movie Clip, TV Clip, Streaming Video, Web and Flash.
- **Background:**
- **Table:**

HTML Programming Guidelines

> **Note:**
> This page is part of the larger discussion on Using Media Formats Supported by Scala Enterprise.

HTML5 content for Android and Scala Players

HTML5 is a technology that allows developers to create portable content that can run on both platforms as well as a desktop browser. Interactivity using the mouse, keyboard, and touch screens is supported, as is the possibility of re-using existing content (keeping in mind that

content designed for the desktop may not be ideal for a Digital Signage deployment).

Widgets Versus Live Content

There are two options for creating and delivering HTML5 content to Android players and the classic Scala Players. Your choice depends upon your needs:

- An HTML Widget
- Live content from a remote URL

A HTML Widget is nothing more complex than a ZIP compressed file, ending with the extension ".wgt", containing a top level file named "index.html" plus any other HTML, JavaScript, and media files your content depends on. If it is helpful, organize the content into sub-folders as well. If you have ever saved an HTML page in a browser to a folder and played the content from the folder, then you have almost created a widget.

While HTML Widgets have not become popular for use over the public internet, they have several advantages. Besides acting as a piece of stand-alone media that can be easily imported into Content Manager, they have the advantage of being more robust at playback time because as the embedded content is downloaded and installed as a package on the players, and is always present even if the network is down. The disadvantage is that you must re-package them and upload a new version of your Widget every time you make changes.

You can mix both techniques within a Widget. A well written Widget will fall back to displaying embedded content if a network access fails.

Scala generally recommends the use of Widgets in a Digital Signage network because of their robust playback properties; playing content from a live server is also supported. Existing content, or very dynamic content can be played without needing to package it as a Widget. However, there are some disadvantages:

- A highly reliable network is required otherwise the content may not display or may not display correctly.
- Due to latency, it may take longer for the content to be displayed.
- It is up to the users to decide if they trust the content source, because unlike Widgets, the content on a live server can be changed at any time by-passing approval processes.
- Content on live server may not lay out well on Android devices.

Developing Portable HTML5 Content for Android and Scala Players

HTML developers know from experience that while HTML5/JavaScript is highly portable, there are issues when targeting different browsers and platforms. The same is true of developing content for Android and the classic Scala Player that plays content using an embedded version of the popular Chromium Embedded Framework. Here are some tips and observations based on our own experiences developing content for both platforms.

- Avoid using the HTML <video> tag on Android as it does not work well on many Android devices. Video may only play full screen, or show various UI components that are undesirable to display. Scala suggest playing your videos as scheduled media items within Content Manager.
- HTML content must be able to run as the top level document in a window, or as child content within an iframe. Assume a white background by default to start, but this can be changed if color is desired. Resolution varies from device to device. In addition Android devices may present a lower resolution window to your SP code then the actual device resolution. It is recommended that you design content that dynamically fits, and scales back on lower resolution devices. Also, try to design your content for the device and not your browser.
- Test performance on an Android Player, minimally using the built-in Web Browser, then do a full test using Content Manager.

> ⓘ **Note:**
> Performance varies on Android devices, in some cases significantly. Scala's Android Player APK disables Hardware Acceleration by default on some Android devices. During testing of these devices, we observed that various visual anomalies, and in some cases even slower rendering on current generation devices can occur when acceleration is enabled.

- If you are building a Widget, it should be designed to run well even if the network is inaccessible (e.g., fallback to default embedded images, text, etc.)
- Many current generation Android devices are limited to playing one video at a time. This is usually due to a driver limitation, but sometimes due to a hardware limitation of the device. Attempts to play more than one video at the same time can result in various side effects. Attempting to play video from within HTML content while video is playing a different frame may result in video not playing, timing out, or an HTML <video> object that stops sending events.
- Test that your JavaScript does not leak objects. Leaks can cause a player to eventually run out of memory. It is a good idea to test content within Google Chrome on the desktop using Chrome's memory timeline tool. Another useful tool in Chrome is to take a heap snapshot, let the code run for a while, take a second snapshot, and use the compare heap dump mode to check for JavaScript object and DOM object leaks.
- If you want to insure that scroll bars stay hidden, inject your Javascript for this into your source content, do not expect the Scala player to be able to reliably control this.
- HTML5 requestAnimationFrame is not supported on all versions of Android. Therefore, it should be tested for compatibility.

The scala.js Support Library

Scala makes available to developers a JavaScript support library "scala.js" that provides Scala specific HTML content with support APIs that work on Android, and classic Scala Players.

Scala.done()

Normally, Scala playback advances at the end of a media item such as the end of a video. Since HTML5 can encapsulate complex behaviors, there is a JavaScript function the HTML5 can use to signal that it is complete, and that Scala playback should advance.
Here is some sample JavaScript:

```
<script type="text/javascript" src="scala.js"></script>
Scala.done();
```

There is a Wait for Done option you can enable on a Web Clip to take advantage of this feature. It is only available in Designer at this time.

Scala.getMetadataValue()

Often it is useful to be able to share parameters with a piece of HTML content.

Within the context of the Scala environment, the preferred and easiest way to pass parameters is through the use of Player and Media metadata. End users can take advantage of the easy to use User Interface SP to enter and edit metadata while the Scala.getMetadataValue() API makes it easy for JavaScript programmers to get the values.

Here is an example of retrieving a Media metadata item named "RSSWidget.Stories" using JavaScript:

```
<script type="text/javascript" src="scala.js"></script>
var storiesToDisplay=Scala.getMetadataValue("MediaItem.RSSWidget.Stories");
if(storiesToDisplay==null) {
 storiesToDisplay=1;
}
```

Note that the API can return null if the metadata is undefined. This can happen for a couple of reasons.

1. Testing the script outside of the Scala environment
2. The metadata has not been defined in Content Manager.

If you wish to test your handling of metadata outside of the Scala player environment it is often possible to test your content within a web browser by including the metadata in the query string of the URL opened in your browser.

For example:

```
http://localhost:80/Widgets/index.html?metadata=MediaItem.Widget.Time=10%26Player.Play
erName=My Player Name
```

Passes two metadata name/value pairs separated by "%26" (an encoded ampersand):

```
MediaItem.Widget.Time=10
Player.PlayerName=My Player Name
```

When content is played within the context of a Scala Android or PC player, metadata name/values are automatically encoded so that all international characters and symbols are supported.

> ⓘ **Note:**
> Depending on the length of your media, some we servers will return a 414 error. Scala recommends that developers testing and debug any HTML content that reads or uses Content Manager metadata before deploying it to a network.

Managing Media Images

Editing Single Media Images

To edit a message:

1. Go the **Content** menu and click on **Media**.
2. Choose the Media item you would like to edit and click on **Properties**.
3. In the screen that appears, you will see the following tabs:
   - **Properties:** Allows you to edit the name, description, start and end dates, roles and workgroups, as well as turn audio ducking and fullscreen on or off.
   - **Metadata:** Edit media metadata values in your Content Manager.
   - **Media Information:** Provides the size and dimension of the image, but the information cannot be edited.
   - **History:** Shows the revision history of the image. You can set one of the previous revisions of the item as the current version from here also. This only appears if the media item is an image.
   - **Approval:** Gives the status of the media. Allows you to reject or approve the media, or save it as a draft. This is dependent on both your Roles and Permissions.
   - **Preview:** Provides a preview of the image.
   - **Broadcast Priority:** Broadcast importance of the image. An example of a high priority image is one that provides updated information, such as the cancellation or rescheduling of an event. It can be set to normal, high or low.
4. Once you have made all your changes, click on either **Save Changes** or **Save and Close** to exit.

Editing Multiple Media Images

To edit multiple messages:

1. Go the **Content** menu and click on **Media.**
2. Choose the images you would like to edit and click on **Edit Multiple**.
3. You will be able to edit values in either the **Properties** or **Metadata** tab, as seen in this example.
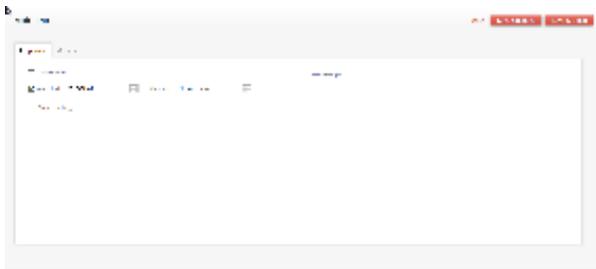
4. Once you have made all your changes, click on either **Save Changes** or **Save and Close** to exit.

> ⊙ **Warning:**
> If you have a media item assigned to a workgroup, clicking on Save Changes, as described above will reassign all selected media items to the new workgroup.

Deleting Media Images

To delete one or more media items:

1. Select the item(s) you want to remove and click **Delete** in the toolbar.
2. Verify your selection by clicking **Proceed**.

Refreshing a Thumbnail

Using this option will allows you to regenerate the thumbnail for the media or templates selected.

To generate a thumbnail:

1. Select the media or template(s) for which you want to generate a thumbnail.
2. Click on **Generate Thumbnail** at the top of the page.

Setting a Custom Thumbnail

Using the following API call:

```
POST
/ContentManager/api/rest/media/<media_id>/thumbnail?width=<requested_width>&height=<re
quested_height>
```

will allow you to set a custom thumbnail size if you have a thumbnail that does not fit the normal 4:3 aspect ratio. The genertor will pick a ratio that will allow 4:3 ratio to be maintained as closely as possible.

Here are some examples:

```
?width=4096&height=2200 will generate a thumbnail of 2933 X 2200
?width=1000&height=2200 will generate a thumbnail of 1000 X 750
```

Understanding the Dashboard

There are icons on the Dashboard that will help you more easily manage your Media. The charts below offer a quick guide to the icons and what they mean.

Media Dashboard icons

Icon	Seen When	Where
❌	Request approval, reject media, Media/template upload incomplete	Media/template landing page
⚠️	Published date for media has expired	Media landing page

Media Health Dashboard icons

Icon	Seen When	Where
⚠️	Media has expired	Media
❌	Media has Rejected elements, and/or an incomplete upload	Media

Message to Image for Samsung and Android Dashboard icons

Icon	Seen When	Where
🖼️	Creating Snapshots of Message	Media landing page

Uploading Templates

A Template is the layout of a page(s) in which a user can change media assets or fill in the text via a simple form. A filled-in Template is called a Message, and it can be be added to Content Manager playlists along with other media.

While templates cannot be created in Content Manager (they must be created in Designer). Content Manager does however, display all uploaded templates, so you can easily manage them.

There are several ways to upload templates into Content Manager:

1. Drag and Drop
2. Manual Upload
3. Publish directly from Designer

Drag-and Drop

To add files in this manner:

1. Create a Template using **Designer**. The file must be in SCZ format, which can be done by publishing the file to a "Local and Share

Folder."
2. Go to Content Manager and select the **Content** menu and then choose **Templates**.
3. Using Windows Explorer, find the file path for the template(s) you want to upload, and drag them to your Content Manager.
4. After dropping the files, a dialog box appears requesting that you select a folder, if required, and optionally remove items to be uploaded from the list, if for example, you select the wrong template and need to remove it. Removing a template on this screen will remove it from being uploaded.
5. Selecting **Upload** will start the process.

A status bar appears in the Menu Bar and on completion a confirmation status appears. You are able to continue working while waiting for uploads to complete.

> ⊕ **Warning:**
> Closing your browser will terminate your upload session.

Manual Upload

If you are uploading templates manually:

1. Go to the **Content** menu and select **Templates**.
2. On the page that appears, select **Upload.**
3. Enter information for the following parameters:
   a. **Save To:** Optionally select the folder in Content Manager to upload to. I
   b. **Add:** Browse to the files directory and select the files to be uploaded.
4. Once you have filled in the necessary data in the Add box select **Upload**.

A status bar appears in the Menu Bar and upon completion a confirmation status appears. You are able to continue working while you are waiting for uploads to complete.

Publishing Directly from Designer

The simplest method of uploading a template is to upload it to Content Manager is by publishing directly from Designer.

To do this:

1. Create your template in Designer
2. Publish Template directly to Content Manager

Assigning Properties to Templates

Properties can be set on individual Templates by selecting the file and clicking **Properties** in the menu or by clicking the file name.

In the screen you will be able to add or edit the following tabs:

- **Properties**: Make changes to categories or workgroups.
- **Administration**: This section will be discussed in greater detail below.
- **History**: Shows the revision history of the template. You can set one of the previous revisions of the template as the current version from here also.

There are two other tabs in the screen, but they are not editable.

- **Template Information**: File information for the template, including size, dimensions and duration.
- **Preview**: Preview of the template.

Your templates can also be sorted through the use of category types and Workgroups, which can be created though the **System** menu and then choosing **Management**. Once created, Templates with categories and or workgroups can sorted and searched by selecting the category/workgroup in the Filter section.

Using the Administration Tab

The Administration Tab has the following columns, some of which allow you to make edits to the template variables:

- **Type**: Kind of file of the template variables.
- **Name**: Name of the template variables.
- **Show:** For filename variables, this can be set in Designer to either **Thumbnails** or **Labels**. Otherwise, the value listed will be **Both**.
- **Label**: Variable's display name. For a label greater than 19 characters, this field is resizable. If there is no name available the name of the variable will show. If the variable has been locked in Designer, it cannot be modified in Content Manager.
- **Default Value**: Will show the default value set. This does not apply to filters.
- **Required**: Can be set to **Yes** (checked box) or **No**, but must be set in Designer.
- **Use Default**: Can be set to **Yes** (checked box) or **No**. If the box is checked, the Default button will be displayed, so the default value of the variable can be used.
- **Presentation**: Used as follows:

Filename	Radio	Picklist	Filter		
Text	Radio	Picklist		Basic	
Real	Radio	Picklist		Basic	
Integer	Radio	Picklist		Basic (Numeric in Designer)	Slider
Boolean	Radio	Picklist			

- **Number of Lines**: Lines in the template. The default is set to 1, but there can be a maximum of 10.
- **Number of Characters**: Characters in the template. The max (also the default) is set to 4096.

Editing Multiple Page Templates

If you are using a template that is multiple pages, the total number of pages will be displayed on the first page. Variables that are not linked or scripted are listed on the first page. If a variable is used multiple times, only the first occurrence can be edited.

Edit Multiple Template Properties

For convenience, you are able to modify the properties of multiple Templates by selecting multiple templates and clicking **Edit Multiple.**

The list of attributes that can be edited using **Edit Multiple** will depend on the media items selected and their commonality.

To do this:

1. Select the Template(s) you want to edit.
2. In the properties screen that appears, choose any or all of the following to edit: Description, Categories and Workgroups. You must click on the box next to the Property in order to edit it.
3. Once you have made your changes, click either **Save Changes** or **Save and Close**.

Deleting Templates

To remove one or more templates:

1. Select the item(s) you want to remove and click **Delete** in the toolbar.
2. Verify your selection by clicking **Proceed**.

Refreshing a Thumbnail

Using this option will allows you to regenerate the thumbnail for the media or templates selected.

To generate a thumbnail:

1. Select the media or template(s) for which you want to generate a thumbnail.
2. Click on **Generate Thumbnail** at the top of the page.

Publishing Older Versions of Templates

Users may experience issues with Templates that were originally published in a version of Scala Enterprise older than Release 10.5. If your template is older than that, please republish in a newer version of the software before attempting to use it.

Managing Messages

Messages are filled-in templates. They are a form of media that can be added to your library of content and are simple to create and edit.

Creating Messages

To create a message:

1. Click on the **Content** menu and then click **Media**.
2. In the screen that appears, and click on the **+New** button and select **Message.**
3. Select the Template required and click the **Next** button.
4. Enter the **Name** of the Message and click the **Next** button.
5. The next dialog box guides you through the criteria set by the Template Administrator. The **Create** button will remain disabled until all required fields have been completed. A guide for use of the variables follows below.

Filename	Radio	Picklist	Filter		
Text	Radio	Picklist		Basic	
Real	Radio	Picklist		Basic	
Integer	Radio	Picklist		Basic (Numeric in Designer)	Slider
Boolean	Radio	Picklist			

6. Click **Create** once you have completed the required fields.
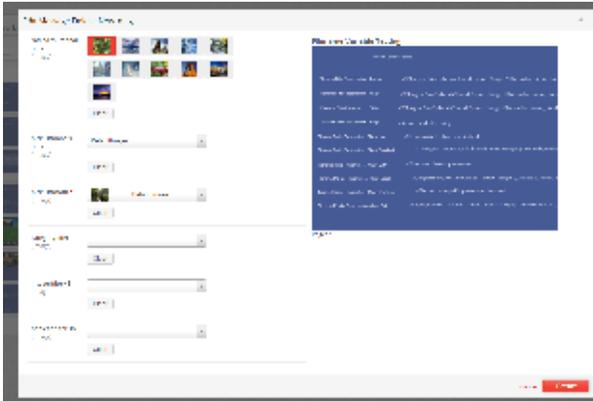
7. You are then taken to the preview tab of the message. Here you are able to see the preview of the message and make additional adjustments including setting Properties and Metadata for the message.
8. Click **Save** or **Save and Close** if you have made additional changes.

Editing Messages

When editing messages, the title of the message will appear in the edit screen

1. Go to the **Content** menu and click on **Media**.
2. Choose the Message you would like to edit and click on **Properties**.

> ✓ **Tip:**
> Depending on the amount of media you have in your library, it may be helpful to filter the results. To filter your media, use the filters on the left hand side. For this example, choose **File Type** and select **Messages**.

3. In the screen that appears, you will see the following tabs:
   - **Properties:** Edit the name, description, start and end dates, categories and workgroups, as well as turn audio ducking and fullscreen on or off.
   - **Metadata:** Edit the media metadata in your Content Manager.
   - **Media Information:** Provides the dimensions and duration of the message, but the information cannot be edited.
   - **Approval:** Gives the status of the messages. Also allows you to reject or approve the message. This is dependent on both your Roles and Permissions. If you make an edit to a message, but lack the proper permissions, the message will be listed "requires approval."
   - **Preview:** Provides a preview of the playlist where the message appears. It also lets you clear the playlist, or select a new one, should you need to do so.
4. Once you have made all your changes, click on either **Save Changes** or **Save and Close** to exit.

Editing Multiple Messages

To edit multiple messages:

1. Go the **Content** menu and click on **Media.**
2. Choose the messages you would like to edit and click on **Edit Multiple**.
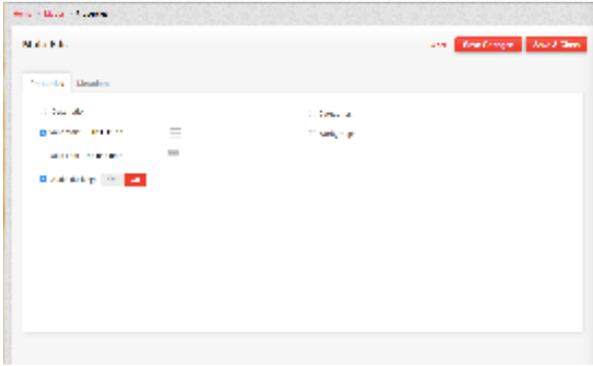3. You will be able to edit values in either the **Properties** or **Metadata** tab, as seen in this example.

4. Once you have made all your changes, click on either **Save Changes** or **Save and Close** to exit.

Alternate Options in the Media Item Toolbar

When multiple messages are selected, there are additional options besides **Edit Multiple**. These include:

- **Add to Playlists:** Select item(s) and add them to a Playlist.
- **Generate Thumbnail:** cCreates an individual thumbnail image for each of the selected item(s).
- **Report:** Select your parameters on the screen that appears and after selecting **Generate**, you will get a report on the selected item(s).

Deleting Messages

To delete one or more messages:

1. Select the item(s) you want to remove and click **Delete** in the toolbar.
2. Verify your selection by clicking **Proceed**.

Managing Content Approval

For some installations, the configuration of the system may be set to require content to be approved by others before allowing it to be used. Until the content is approved, it will not appear on the playback device being targeted.

Setting Up Approval

Things to know about the approval workflow before using it:

- Make sure the option to request Content Approval is enabled. The procedure for this is discussed in Configuring Your Network Settings (under the Approval Settings Tab).
- Certain users are set up to grant approvals through user account configuration based on user roles and permissions.
- By default, these content approvers will receive email notifications alerting them to items needing approval. They might have disabled this email notification on their account, but they can still find these approvals on the dashboard and approve them regardless.

Requesting Approval

To request approval:

1. Follow the process for creating the Message.
2. Select the message in the list of media and select **Properties**.
3. In the dialog box that appears, go to the **Approval** tab and click on the **Request Approval** button.
4. Repeat steps 1-3 for each content item to be approved, as requesting approval is not something that can be done across multiple items.

Approving Content

To approve content:

1. Select the message in the list of media and select **Properties**.
2. In the box that appears, go to the **Approval** tab click on the **Approval** button.
3. Repeat steps 1-3 for each content item to be approved, as approval is not something that can be done across multiple items.

Managing Playlists

Playlists are a sequence of media items to be played in the order specified, according to their schedule. Smart Playlists can provide an automated way to create playlists based on a specific criteria.

This section will cover key functions related to playlists:

- Understanding Playlist Types
- Creating Playlists
- Editing Playlists
- Editing Playlist Items
- Managing Smart Playlists

Understanding Playlist Types

There are three different types of playlists that can be created:

1. **Media:** Default playlist type. It can contain files such as images, movies, flash, web pages, widgets, etc.
2. **Audio:** Contains only supported audio Media files and other audio sub-playlists.
3. **Data:** Can contain files of any type, such as media files, audio files and pure data files, such as XML or Excel files. ScalaScript files (SCZ files) can only be added to this type of a playlist.

For the specifics on Scala's guidelines regarding the types of files supported for uses as content, please visit Using Media Formats Supported by Scala Enterprise.

There is a special playlist that can exist on a Channel that contains **non-scheduled content**. It is a method used to send linked content to a Player. An example of non-scheduled content is icons to be used for a weather app. (The sun icon can't be scheduled to play all the time, and we don't know in advance exactly when it should be played).

Creating Playlists

There are two ways to create a Playlist:

1. Manually from scratch.
2. Duplicating an existing playlist.

Manually Creating a Playlist

1. In the menu at the top, click on the **Planning** menu and choose **Playlists**.
2. On the page that appears, click **+New**
3. Enter a **Name**, and **Description** (optional)
4. Choose a **Playlist Type** (Media, Audio or Data).
5. Click **Create**.
6. On the page that appears next, make changes in any of the four tabs as needed (Properties, Ordering, Object History and Items).
7. Click **Save Changes** or **Save and Close** when you are finished.

Duplicating a Playlist

1. Choose the one you want to make a copy of, and choose **Duplicate** in the menu above the list of Playlists.
2. In the screen that appears, make any necessary changes to the name, and click **Duplicate**.
3. The Properties for the Playlist will appear. If necessary, make changes to the Properties, Ordering, Object History or Items in the Playlist as needed.
4. Click either **Save Changes** or **Save and Close** once you are finished.

Working with Sub-Playlists

A sub-playlist is a playlist type that is nested inside another playlist. You can create several smaller playlists which 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.

To create a sub-playlist:

1. Go to the **Playlist** menu and select the Playlist to which you want to add a sub-playlist.
2. Choose **Properties** and then click on the **Items** tab.
3. At the top of the page, choose **Add Sub-Playlist**, and on the screen that appears choose the items you want to add to the playlist.
4. When you have finished adding all the items, choose either **Add** or **Add & Close** to complete the playlist.
5. Repeat this until you have add the sub-playlist you want. Click on **Save Changes** or **Save & Close** to exit.

Editing Playlists

If you are looking for information on editing smart playlists, please see Managing Smart Playlists.

Reviewing your Playlists

When viewing your playlists on the **Playlist** Landing Page, if a playlist is being used then a linkable counter is shown in the **Last Modified** column . Clicking the link will show you where the playlist is scheduled or contained in other master playlists as a sub-playlist. If you attempt to delete a playlist that is 'in use' then a similar dialog box appears to show usage and warn you of their removal before deletion.

Editing a Playlist

Playlist Properties

To view the properties of a **Playlist,** go the **Planning** menu and select **Playlists**. On the screen that appears, click on the name of the playlist you want to view or edit. You can also use the search bar, found at the top of the list. Type at least three characters and the search function will start attempting to auto complete, based on the playlists in your library and the filters you have set up in the list located on the left hand side.

Selecting and Editing Playlist Properties

Once you have selected the playlist, a screen will appear with the following tabs:

- **Properties**: Manage the name, category, workgroups and any or all of the durations: image duration, transition and transition duration. If the playlist is controlled by a Third Party, that can be selected as well via the **Yes** or **No** option.
- **Ordering**: Can be set to **Sequence** or **Shuffle**.
    - Shuffle works like a deck of cards. The order is initially randomized, and items are dealt from the deck until the deck is used up. Then it reshuffles the deck and starts again from the top. This guarantees that all of the items will have played once. There's a special case could happen when the deck is reshuffled, where the first card of the new deck can be the same as the last card pulled from the previous deck. But the player automatically detects and avoids this. The shuffle order is stored in memory so that if the playlist is set to play 'n' items each time, it will play the next shuffled item. The deck will be reshuffled if the playlist is modified (items removed, added or changed) or the Player is rebooted.
- **Object History**: Creation and modification information for the playlist
- **Items (#)**: List of item(s) found in the playlist. Media or Sub-Playlists can also be added on this screen. Media on the page is available in grid or list view.

Understanding the Difference Between Shuffle and Random

It's important to understand the difference between "random" and "shuffle". Truly random would mean any media item has equal chance of playing next, including the media items that just played. Scala makes use of a "shuffle" methodology which is different from (and superior to) random, when it comes to desired behaviors of playlists.

Shuffle works like a deck of cards. The order is initially randomized, and items are dealt from the deck until the deck is used up. Then it reshuffles the deck and starts again from the top. This guarantees that all of the items will have played once.

There's a special case could happen when the deck is reshuffled, where the first card of the new deck can be the same as the last card pulled from the previous deck. But the player automatically detects and avoids this.

The shuffle order is stored in memory so that if the playlist is set to play 'n' items each time, it will play the next shuffled item.

The deck will be reshuffled if the playlist is modified (items removed, added or changed) or the Player is rebooted.

Playlist Item Sequence

Within the **Items** tab noted above, the sequence of items in the playlist can be modified by dragging and dropping.

Assigning Items to a Playlist (owner workgroup only, no shares)

|	Playlist without Workgroup Assigned	Playlist with Workgroup Assigned
Super Admin	Can only add items without Workgroup	Items of playlist's Workgroup, Items shared with playlist's Workgroup, Items with no Workgroup
User without WGA	Can only see items without Workgroup and can only add items without Workgroup	Can only see items withoutWorkgroup so they can't see the playlist
User with WGA	Can see items in User's Workgroup and items without Workgroup. Can add items in User's Workgroup and those items without Workgroup	Items of playlist's Workgroup, Items shared with playlist's Workgroup, Items with no Workgroup

> ⓘ **Note:**
> If adding items to a playlist as a Super Administrator or Administrator, you are unable to add items with a workgroup if the Playlist has no Workgroup assigned.

Using the Alternative Option for a Playlist

There are times when your Playlist will have no items to play. On the Timeslot Properties, choose from the following:
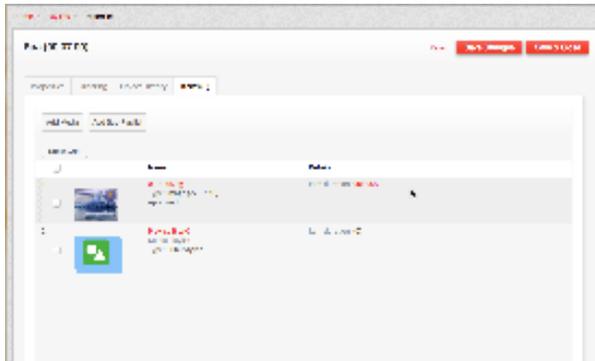
1. Black Page
2. Transparent
3. Playlist
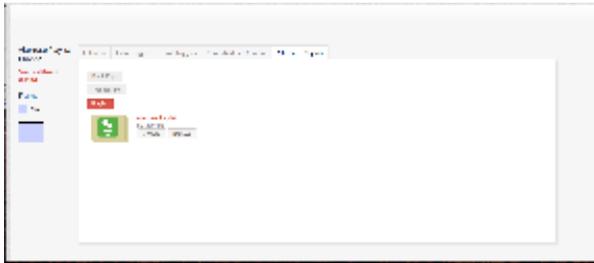
Batch Editing

Editing Multiple Items Within a Single Playlist

1. In the menu at the top, click on the **Planning** menu and choose **Playlists**.
2. Click on the name of the Playlist and click **Properties**.
3. Choose the items you want to edit by checking the checkboxes next to them and clicking **Properties** at the top of the frame.

4. Make your changes to the items in the tabs (Item Properties, Scheduling and Conditions) and click **OK** when you are done.
5. If you would like to change the order of the items in the playlist, highlight the items you want to move, and slide it to where you want to move it (ex. moving from the second spot to the first)
6. When you made all of your changes, either click **Save Changes** or **Save and Close** to exit.

Editing Properties across Multiple Playlists

1. In the menu at the top, click on the **Planning** menu and choose **Playlists**.
2. Mark the checkboxes next to the playlists you are trying to edit then click **Edit Multiple**.
3. Choose the items you want to edit by clicking on the checkbox next to it and making the changes inline.
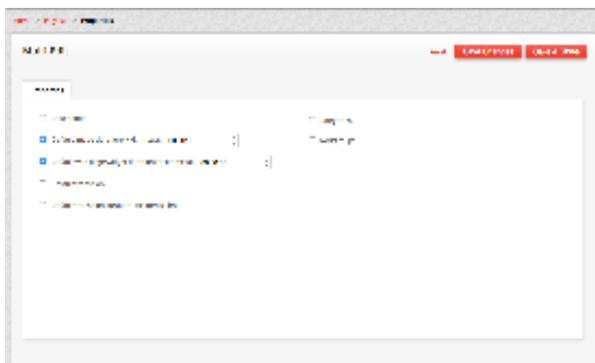
4. Make your changes and click **Save Changes** or **Save and Close** to exit.

Editing Playlist Items

In addition to being able to edit Playlists, you are able to edit specific items within playlists. You can edit how individual or groups of media objects will play on the screen. Within these properties you can define the when, where, and how your media will play back.

To access the items in your playlist:

1. Go to the **Planning** menu and select **Playlists.**
2. Choose the playlist you want to view and select **Properties**.
3. In the screen that appears, select the **Items** tab.
4. View your items and make any changes as noted in more detail below.

Managing an Item's Properties

Select an item, and click **Properties.** This yields a screen with the following three tabs:

1. **Item Properties:** Allows you to set the following parameters:
   a. **Item duration:** Calculated in milliseconds. How long the item will play. If the item is started when a timeslot ends, it will finish as long as playback begins. These are things to consider when creating schedules and putting items into them.
   b. **Transition:** Choose one of the broadcast quality, pre-rendered transitions.

   > ⓘ **Note:**
   > If you select any of the following: Wipe, Corner, Curtain and Center, that they will be replaced by a basic cut wipe, as Player's ability to support them is unreliable. The following wipes have been enabled: Cut, Dissolve, Straight, ScrollIn, ScrollOut, FlyFade, Fade, Push, ShortFade, ZoomUp, ZoomFade.

   c. **Transition Duration:** Set the length of the transition.
   d. **Audio Ducking:** Can be turned on or off. Allows you to mute a secondary audio track to allow audio from the media object to play uncluttered by background music
   e. **Fullscreen mode:** Allows you to set an object to play on the entire screen. The configuration of your frameset will determine how the image scales.
   f. **Audit Item:** Clicking **Yes** to include this item in playback reports.
   g. **Disable Playback:** Setting this to "**Yes"** will keep the selected item from playing.
   h. HTML or widget-based items in a playlist allow for the following additional parameters to be set:
      - **Composition Mode:** How overlapping objects are rendered. It can be set to either transparent (default) or opaque.
      - **Page Backdrop Opacity:** Set the amount of translucence of the background.
      - **Show Scrollbars:** Make the scrollbars of the object either visible or invisible.
      - **Interactive:** Allows you to set whether the object is static or not.
2. **Scheduling:** Schedule for the individual object, not the overall Playlist. Each individual media object, can dictate when it is available to the playlist. Parameters you have the ability to control are:
   - **Valid Range Switch:** Can be set to Yes or No. Selecting Yes will reveal calendars to set your valid start and end dates.
   - **Time Schedules:** Allows you to choose the time of day and the day(s) that a media object will be valid in the playlist. This function allows for the concept of "day parting" with certain media playing in the morning, and other objects playing in the evening. If you need to have more than one Time Schedule, click on **Add More**, and repeat the process of setting one up as many times as necessary.
3. **Conditions:**– Allows for routing a media object to a particular player or group of players, and insures your media will play only where you want it. To use this, Player Metadata must be set up. Once a player has metadata assigned to it, it becomes aware of where it is, and its function.
   - **Any/All Switch:** Dictates any or all of the conditions for the object must be met for it to play on a given screen.
   - **Add:** Allows you to add a condition a particular object. To add more than one condition, click on the Add More button. To delete a condition, click **Remove** in the last column.

Managing Playlist Items

In addition to making changes to the Properties of an object, you also have the ability to perform these other functions after selecting item(s) in the list:

- **Add Media:** Allows you to put more items into the playlist. If you do add more items, click on either **Add** or **Add and Close** to exit.
- **Add Sub-Playlist:** Add an already existing sub-playlist(s) to the Playlist you are viewing and editing. Once you are done, click on either **Add** or **Add and Close** to exit.
  - To set the number of items to play from the Sub-playlist, select the playlist and click properties. On the Scheduling Tab, set Items to play to either **play all items** or **play this many items each time** and enter a number of items.
- **Create Sub-Playlist:** Add a new sub-playlist to an existing playlist. To add items or make other changes to this Sub-Playlist, use the Properties screen that appears. You will be able to make changes to the list from here
  - **Properties:** Set the name and description for the sub-playlist. Additionally, you can set the default image duration, and also the default transition and its default duration, as well as the Categories and Workgroups for the Playlist.
  - **Ordering:** Can be set to either **Sequence** or **Shuffle**.
  - **Object History:** Provides the creation and modification history. You can not make changes to this tab.
  - **Items (#):** Shows the number of items in the playlist, and allows you to add more or to add a sub-playlist.
- **Remove:** Deletes item(s) from the playlist. The system will ask if you want to remove the selected item(s). If you do, click on **Proceed.**
  - **Warning:** Deleting playlists in use will remove them from schedules or master playlists.
- **Open Playlist Item:** Shows the item in the **Media** list, and allows you to make changes to it.
- **Move:** You can enter a new position in the list for the selected media items. Drag and drop can also be used to move around items in the list.

Understanding the Dashboard Icons

There are icons on the Dashboard that will help you more easily manage your Playlist. The chart below offers a quick guide to the icons and what they mean.

Playlist Health

Icon	Description
⚠️	Playlist contains expired elements
❌	Playlist contains rejected elements, incomplete uploaded elements or pending approvals

Managing Smart Playlists

Smart Playlists allow you to create a customized playlist. Their content is chosen automatically from your library in Content Manager as a result of using certain criteria. Just like a regular playlist, there are three types of Smart Playlists that can be created:

1. Audio
2. Data
3. Media

Creating Smart Playlists

There are two ways to create a smart playlist:

1. Manually from scratch.
2. Duplicating an existing one.

Manually Creating a Smart Playlist

1. Go to the **Planning** menu at the top of the page, and select **Playlists**.
2. On the screen that appears, select **New Smart Playlist**
3. Enter a name and choose a playlist type (media, audio or data), and click **Create**.

Duplicating an Existing Smart Playlist

1. Select the playlist you want to make a copy of, and choose **Duplicate** in the menu bar above the list of Playlists.
2. In the screen that appears, make any necessary changes to the name, and click **Duplicate**.
3. The Properties for the Playlist will appear. If necessary, make changes to the Properties, Ordering, Object History, Item Conditions or Items in the Playlist as needed. These properties will explained in greater detail in the next section.
4. Click either **Save Changes** or **Save and Close** once you are finished.

Editing Smart Playlists

Either by doing so in the screen that appears after you have created a Smart Playlist, or choosing one from your list and clicking on **Properties**, the attributes of smart playlists are editable. Once you have made your desired changes to the smart playlist, click on either **Save Changes** or **Save and Close** to exit the screen.

When you look at the Properties of a Smart Playlist, a pane with the following tabs will appear.

- **Properties**: Manage the name, category, workgroups and any or all of the durations: image duration, transition and transition duration.
    - If the playlist is an audio one, you will not be able to set any transitions.
- **Ordering:** Can be set to Sequence or Shuffle.
    - Can also be sorted by Name or Last Modified and Ascending or Descending
- **Object History:** Creation and modification information for the smart playlist
- **Item Conditions:** Can be set for any or all of the following:
    - **Limit to:** Set the the Number of items and how they are chosen, either by newest modified date or randomly.
    - **Update automatically every:** Set the the number of minutes between smart playlist generations.
    - **Any/All of the following conditions:** When adding conditional criteria, you are able to test the results by clicking Show Matching Items. The following is an example of setting conditions.
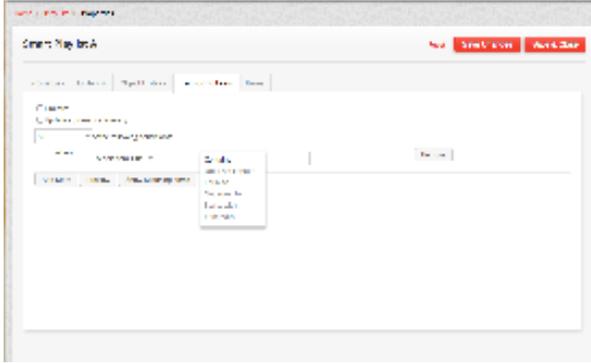
- **Items**--**(#)**: List of item(s) found in the playlist. Media or Sub-Playlists can also be added on this screen. Media on the page is available in grid or list view.

ⓘ **Note:**
Great care should be taken when creating a large number of smart playlists, as updating at a high frequency can impact server performance. In particular, consider the plan generation and distribution cycle associated with delivering content to your network of players. For example, if you are only delivering content to your players every 4 hours, then having Smart Playlists update every 5 minutes (instead of the default of 60) is a waste of Content Manager's resources.

Update Smart Playlist

Manually update the playlist, instead of a the time you have set it to update automatically.

Convert to Normal Playlist

Convert the playlist to a normal one, but you will lose the Smart Playlist Conditions. A screen will appear asking if you are sure about converting the playlist. If so, click **Proceed.**

Editing Multiple Smart Playlists

Mark the checkboxes next to the playlists you are trying to edit then click **Edit Multiple**.

Choose the items you want to edit by clicking on the checkbox next to it and making the changes inline.
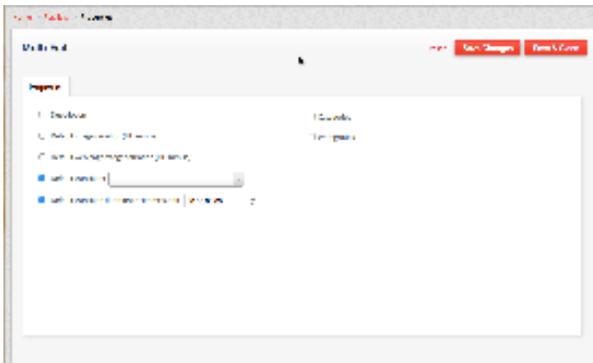
Make your changes and click **Save Changes** or **Save and Close** to exit.

Deleting Smart Playlists

Mark the checkbox(es) next to the playlist(s) you want to remove and click **Delete**.

A box will appear asking if you are sure that you want to delete the playlist. After verifying, click **Proceed.**

Auto-Importing of Content

Sometimes you have content outside of the Enterprise ecosystem, either on a file transfer protocol (FTP) site, an SSH file transfer protocol (SFTP) or via a Universal Naming Convention (UNC) path, all of which are usually located outside of your local network. Using the Publish Location dialog allows you to automatically ingest from outside sources, following the default one minute delay, and they can found via the **System** menu, under the **Management** category.

ⓘ **Note:**
Please do not confuse SFTP (SSH File Transfer Protocol) with Simple FTP, or FTPS (FTP over SSL).

The image below shows an example of the Publish Locations dashboard.

The following list explains the possible values found in the **Status** column of this screen:

- 🚫 — Publish location disabled
- ✔ — Publish location enabled

Creating a Publish Location

To add a publish location:

1. Go to the **System** menu, and then select **Management**
2. In Management, select **Publish Locations** and select **+New**.
3. On the screen that appears, enter a name, choose the type of location (either FTP, SFTP and UNC). Enter a hostname and a path, and change the port if necessary (it defaults to Port 21). Supply your username and password and then confirm your password. Change the check interval from the default 10 minutes, if necessary.
4. Click **Create** once you entered the information.

Setting Up a Publish Location

Once you have added the Publish Location, click on the linked name to view or edit its details. In the pop-up screen that appears, you can modify the location attributes in the **Properties** tab, including: category(ies), workgroup(s) and approval type.

The **Host Details** tab allows you manage host attributes and then verify them by testing the connection. For performance reasons, adjust the **Check interval** to an appropriate frequency based on the update frequency of that publish location.
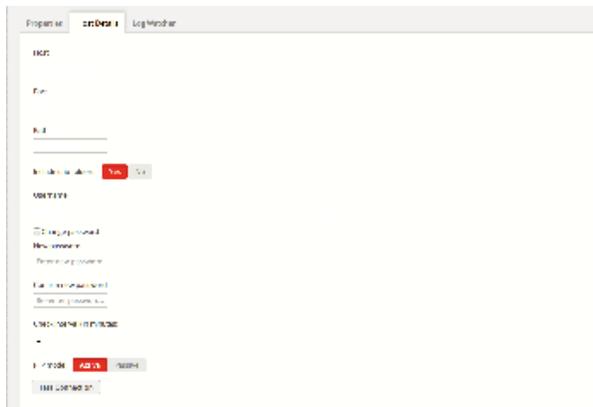
✅ **Tip:**
If the folder listed has other unnecessary files, they will be retrieved anyway. We recommend creating a folder that only contains the files you need.

If you try to use both manual uploads and a Publish Location, any media of the same name will have a new revision. As long as the file name is the same, any media item properties (e.g. categories) will be preserved. Any newly modified files will also be uploaded as a new revision, and will have the same name.

ⓘ **Note:**

> If you remove a file from the UNC path it will not be automatically removed in the media library!

Editing Publish Location Properties

Opening the properties of the publish location allows you to make edits to some of them

To access the properties of a Publish Location:

1. Go to the **System** menu and select **Management.**
2. In that menu, choose **Publish Locations**.
3. Select the network you want to make changes, and choose **Properties**.
4. In the screen that appears, you will see the following tabs:
   - **Properties**: Allows you to set the type (UNC, FTP and SFTP) and enable or disable the host, the location of the media storage folder (either to root, or a folder named after the Publish Location), and the type of media approval (auto approve, send approval request, or to do nothing, which will leave the media unapproved). Categories and workgroups can also be set on this screen. Be aware that if you add new items to the category or workgroup, they will automatically have these new values as well.
   - **Host Details:** Shows and allows you to set the host details, including address, port and path as well as whether or not to include subfolders. You can also make changes to the username and password for the host from here, and also set the check interval, set you FTP mode to active or passive and test your connection to the host.
   - **Log Watcher:** Shows you the logs for the Location.

   > ⓘ **Note:**
   > Clicking on **Clear Log Screen** will **ONLY** clear the logs visible on the screen, not all of the logs for the Location.

5. If you make any changes in these tabs, click either **Save Changes** or **Save and Close** to exit.

Managing Channels

Channels are an important piece of the Enterprise ecosystem, as they are the object that the Player "listens to" in order to get its content. They can be further broken down into Framesets, which define the screen into smaller pieces, each of which can have its own content.

The topics discussed in this section include:

- Managing Framesets
- Creating Channels
- Editing Channels

Managing Framesets

Framesets allow the user to define the layout that is associated with a channel. Once a frameset is applied to a Channel, the attributes are copied to that channel.

They allow you to break the screen into sections and run content within each area uniquely. A common example of a frameset is a newscast with the news program running in the top area and information such as sports scores, stock tickers, or town-specific weather running in a box (usually referred to as a "crawl") at the bottom of the screen.

> ⓘ **Note:**
> For the purposes of example, we are working with a frameset for the default screen size of 1024 x 768. If your frame is for a larger or smaller screen, you will have to adjust up or down accordingly.

Creating Framesets

To create a frameset:

1. Go to the **System** and then select **Management**, the select **Framesets** from the list.
2. On the page that appears, click **+New**.
3. Enter a name for the Frameset and click **Create**.
4. In the **Properties** screen that appears, you make changes to the frame you have created, including the ability to change:
   a. Screen size from the default 1024 x 768 size.
   b. Distance the frame should be be from the left side or top of the screen.
   c. Scaling (either fill frame exactly, fit inside frame, or fit and trim to frame) and hiding frames by selecting the check box in the hidden column (this might be valuable for audio only content). Fit inside frame will be set by default.
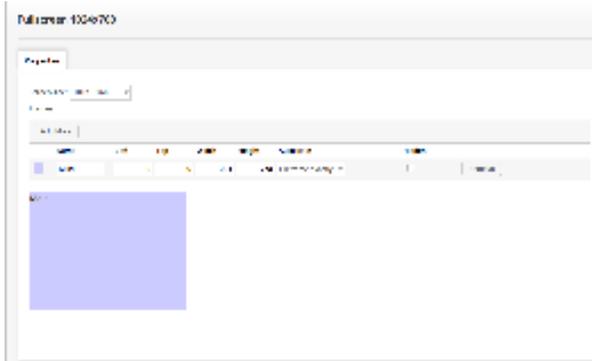
5. If you need to add additional frames, please click **Add More** and repeat until you have added the necessary amount of frames for your configuration.

Content Manager currently supports framesets for the following pre-defined size screens.

640 x 480	800 x 600	1024 x 1280	1440 x 960
720 x 480	840 x 480	1280 x 720	1440 x 1080
720 x 576	852 x 480	1280 x 768	1600 x 1024
768 x 1024	1024 x 525	1280 x 1024	1600 x 1200
768 x 1360	1024 x 768	1360 x 768	1920 x 1280
		1366 x 768	

To create a screen size other than one of these pre-defined sizes, change from the default 1024 x 768, and select the screens size drop down menu and select **Custom**. This option is at the bottom of the list, so you will need to scroll down to select it.

Editing Framesets

To edit a frameset:
1. Go to the **System** and then select **Management**, the select **Framesets** from the list.
2. Select the frameset you want to edit and select **Properties**.
3. Make the changes you would like to the selected frameset and click **Save Changes** or **Save and Close** to exit.

Understanding the Properties Screen

For a better understanding of what you are editing, we will take a look at what you can edit on the **Properties** screen.
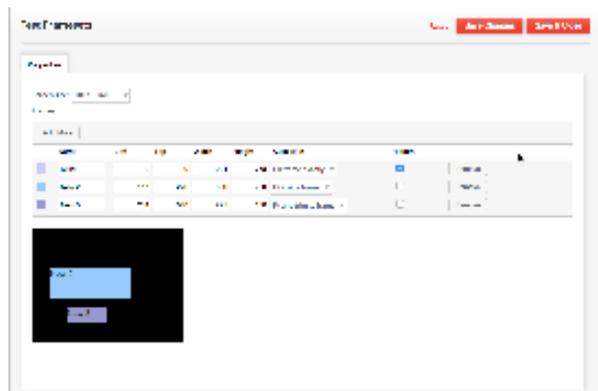
In the example above, there are three frames.

- Frame 1 (called Main) is set up to cover the entire screen and fill the frame exactly. It has been created, but is hidden (as the check box under the **Hidden** is column is selected) for the purposes of this example.
- Frame 2 (called New 2) is set to appear 117 pixels from the left edge of the screen and 270 from the top. It is set to fit inside the frame, which means it will be adjusted in size to appear on the screen if necessary. By default, it will not appear unless Main is hidden, as we have done.
- Frame 3 (called New 3) appears at 234 pixels from the left hand side and 540 from the top. It is set to fit and trim to the frame, meaning

that Content Manager will adjust its dimension for size, should it be too large to fit the screen otherwise.

Hidden: It will hide any frame where this checkbox is selected. A Frame would be set to hidden when it is not used for presentation. An example of this is a frame you may only need during a certain time of year. If the content is static it is easier to simply hide the frame then re-create the content as needed.

Another common use of a hidden frame is as a control frame, which is a frame that never displays anything visually. They are in the frameset, but not visible on the display. Control frames "do" things, such as retrieving data from a third party feed (e.g., news), turn monitors on and off, or other uses where something needs to be done by system, but not seen by the end user.

> ⓘ **Note:**
> Hiding a frame is not supported by all Scala certified Players. Please test your Player to see if doing so is supported before attempting to hide a frame.

Remove: will delete the selected frameset. Please be aware that unlike other operations you perform in Content Manager where you are deleting or removing something, the system will not confirm if you are sure you before removing the frame.

Sequence of Framesets: Can be changed by dragging and dropping into the desired sequence. If frames overlap within the screen real estate, the frames higher in the list will be presented on top of the frames lower in the list (like layers).

Deleting Framesets

To delete a frameset:

1. Go to the **System** and then select **Management**, the select **Framesets** from the list.
2. Select the frameset(s) you want to remove and click on the **Delete** button.
3. The system will ask if you want to remove the selected frameset(s). If so, click **Proceed**.

Creating Channels

Before displaying media in Content Manager on a Player, you need to define the layout of the screen. This is done via using a Channel. These co ntains a Frameset that specifies the screen size and the size of the frame (or frames) within it, and can be based on a single frame display or can contain multiple frames, each with their own Playlist.

To create a single frame channel:

1. Go to the **Planning** menu and select **Channels**.
2. Select **+ New**
3. In the box that appears, enter a name and select a Channel from the three types, which are:
   a. Audiovisual
   b. Audiovisual with separate audio track
   c. Audio track only
4. Choose a frameset by clicking on **Select,** and picking a frameset from your existing list.
5. Once you have chosen a frameset, click **Select.**
6. When you are finished, click **Create.**

Framesets have a specific resolution, which ideally should be consistent with the resolution of the screens you are using with your players. If you have different size screens that need to show the same channel, try to make sure they have the same aspect ratio. Then, use a frameset that matches the highest resolution screen you have and the other players will scale the channel down accordingly.

Editing Channels

Editing a Channel

1. Go to the **Planning** menu and select **Channels**.
2. On the list that appears, select the channel you want to edit, and select **Properties.**
3. In the window that appears next, you will be able to edit items within the following tabs:
   a. **Properties:** Make edits to the name and description
   b. **Audiovisuals:** Allows you to enable or disable audio in visual media for audio visuals channels. For audio only channels, the only property you will be able to edit on this page is whether or not the channel is controlled by a Third Party app. You will also have the ability to select a different frameset for the channel.
   c. **Player Metadata:** Add player metadata here.
   d. **Variables:** Add a variable here by clicking the **Add More** button. The type and control script for each variable can edited by choosing from the drop down menus for each. If you need to delete a variable, click **Remove** in the far right column.
4. When editing the Properties of a specific Channel, you will also be able to make changes to its schedule by clicking on the **View Schedule** link to the right of the name.
5. Once you have made your changes, click either **Save Changes** or **Save and Close** to exit.

Editing Multiple Channels

1. Go to the **Planning** menu and select **Channels**.

2. On the list that appears, select the channels you want to edit, and select **Edit Multiple.**
3. Make changes to the tabs by clicking the check box next to the property in Properties, Audiovisuals and Player Metadata you want to edit. Please be aware that you will not be able to edit variables for multiple channels, as this is not a supported function.
4. Once you have made your changes, click either **Save Changes** or **Save and Close** to exit.

Duplicating a Channel

1. Go to the **Planning** menu and select **Channels**.
2. On the list that appears, select the channel you want to make a copy of edit, and select **Duplicate.**
3. Make changes to the Properties tabs or Schedule, if necessary.
4. Once you have made your changes, click either **Save Changes** or **Save and Close** to exit.

Deleting Channels

1. Go to the **Planning** menu and select **Channels**.
2. On the list that appears, select the channel(s) you want to remove, and click on **Delete.**
3. You will be ask if you want to remove this channel(s). If so, click on **Proceed**.

Scheduling Content

Content, once it is ingested into the system, can be placed into a schedule for ease of play in Content Manager. Depending on the nature of the content, its play can be triggered by an event, either an external event, or the time of day.

Topics covered in this section include:

- Managing Schedules
- Managing Triggers

Managing Schedules

Creating a Schedule will allow you to show content at specified times. For example, certain content might be relevant for a specific time window of the day.

> ⓘ **Note:**
> You must first create a Channel, as Schedules only exist within a Channel.

There are two methods to creating a Schedule:

1. Drag and Drop within a timeline view.
2. Manually.

For the purposes of both of these examples, we will assume that the Content Manager you are using only has one channel.

Each channel has four tabs for scheduling:

- **Calendar:** Weekly view where timeslots can be created. Each time slot contains a playlist.
- **Time Triggers:** Allows the schedule to be interrupted at specific times, over and above that specified in the Calendar.
- **Event Triggers**: Based on an external event that triggers content to be played. This tab will not appear unless you have event triggers set up.
- **Non-Scheduled Content:** Used to deliver a data file that is not specifically scheduled via a media playlist.

If you have more than one channel then you may choose a different channel to schedule by choosing **Select a different channel.** If your channel uses a frameset with multiple frames, then you can select the frame to schedule by choosing **Select a different frame.**

It should also be taken into account when scheduling items that timeslots in a schedule may end in the middle of item being played back.

Creating via Drag and Drop

1. Click and drag a window in the calendar area.
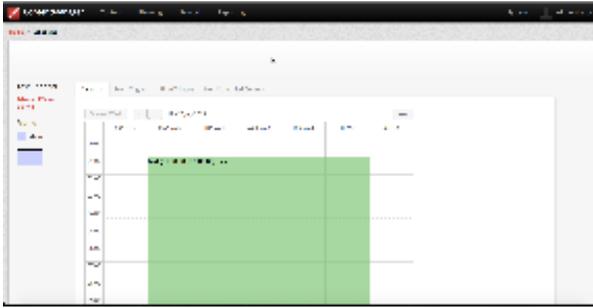
2. After releasing the mouse, the Timeslot properties box will appear.

3. Click **Change** to select a different playlist, if necessary
4. Set the **Schedule** parameters:
   - Set your desired **Valid start** and **Valid end** dates parameters.
   - Set the timeslot's **Start time** and **End time.**
5. Set the **Recurrence** pattern:
   - **Once:** Choose the day to have timeslot recur.
   - **Weekly** (default): Choose the day of the week.
   - **Monthly:** Select the month and year (the current year is the default), as well as the frequency of months (either 1,2,3,4 or 6) and the date of the month for this to recur.
   - **Yearly**: Select the day of the year for this to run.
6. Modify **Audio Ducking** and **Full Screen** settings as needed.
   - Audio ducking is the player's ability to turn down the volume of other audio (typically background audio tracks) when another media item is playing.
7. Set the following options:
   - **Locking** (either **Enabled** or **Disabled):**Lock the timeslot from editing.
   - **Priority** (set either to **Normal**, **On Top**, or **Underneath**): Relates to the layering of timeslots. For example, if you have a 24 x 7 playlist, and have an emergency message that needs to run for two hours, you can set it on top of the default timeslot. If you know it is something you can will again, set it to run as underneath until you need it again.
   - **Color:** Color the schedule will appear when looking at the schedule for the channel.
8. Once complete click **Create.**
9. If you are creating more than one schedule, repeat as needed. When finished, click either **Save Changes** or **Save and Close** to exit.

Manually Creating Schedules

1. Go to the **Planning** menu and select **Schedules**.

2. On the screen that appears, click **New**. If you do not change the time, a 24/7 timeslot will be created by default.
3. Once you have done this, the **Timeslot Properties** box shown above will appear.
4. Follow steps 3-9 in the prior Drag and Drop section.

Editing Schedules

1. Select the schedule you wish to edit by double clicking it. If there is more than one frame on the page, select the frame first.
2. Make your changes and click **Update** when you are finished.

OR

1. Click on the Schedule you want to make changes to and select Edit.
2. Make your changes and click **Update** when you are finished.

Deleting Schedules

1. Select the schedule you wish to edit by double clicking it. If there is more than one frame on the page, select the frame first.
2. Click **Remove**. You will be asked if you are sure that you want to delete the schedule.
3. If you do want to remove the schedule, click **Proceed.**

OR

1. Click on the Schedule you want to make changes to and select Remove.
2. You will be asked if you are sure that you want to delete the schedule, and if so select **Proceed**.
3. Make your changes and click **Update** when you are finished.

Using the Alternative Option for a Playlist

There are times when your Playlist will have no items to play. On the Timeslot Properties, choose from the following:
1. Black Page
2. Transparent
3. Playlist
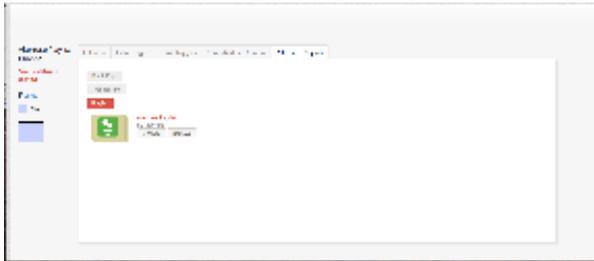
Understanding the Dashboard

There are icons on the Dashboard that will help you more easily manage your Schedule. The chart below offer a quick guide to the icons and what they mean.

Icon	Seen When	Where
🔒	Timeslot is locked	Calendar page
✚	Timeslot is new	Calendar page
↻	Timeslot is weekly and no end date	Calendar page
↻	Timeslot is weekly with end date	Calendar page
↻	Timeslot is monthly and no end date	Calendar page
↻	Timeslot is monthly with end date	Calendar page
↻	Timeslot is yearly and no end date	Calendar page
↻	Timeslot is yearly with end date	Calendar page

Managing Triggers

Triggers are a way of defining a specific playlist for a Player to start playing when an external input happens or at specific time. The external input comes from Control Scripts, like a VBScript that monitors a file or controls an external device through a serial port. Control scripts are VBScripts, JScripts or Python Scripts that are created using third party tools, specifically for the purpose of managing external conditions that you want, at times, to interrupt the normal playback of a frame in your channel.

For more information on specific kinds of triggers, please see:

- Using Time Triggers
- Using Event Triggers

Using Time Triggers

By using a Time Trigger, you can set up specific content to play at a specific time. For example, if you use Content Manager in a restaurant, you can set a Time Trigger to have your lunch specials run during lunchtime.

To add a new time Trigger:

1. Go to the **Planning** Menu and select **Channels**.
2. Open the **Channel** you want to edit and click on the **View Schedule** link to the right of the name.
3. Choose the second tab, which is marked **Time Triggers**.
4. If you have not have not created any previously, click on the **Add** button. However, if you have created, the button will say **Add More**.
5. On the screen that appears, enter a name and set up the parameters, which are explained below.
6. Once you have done all this, click **Create**.

Editing Time Triggers

When you set up a time trigger, the following properties can be edited:

- **Playlist**: Choose the playlist you want the trigger to effect. Using the drop down menu below the playlist you have set the triggers to play some or all of the items on the list.
- You can set the Playlist to be (or not to be):
  - Controlled by a Third Party app. This option can only be set by the Administrator. It is useful for certain third party apps that require you to set up the trigger, but control the playlist to be used. It protects you from modifying a playlist under its control.
  - Use audio ducking (audio ducking is the player's ability to turn down the volume of other audio-typically background audio tracks-when another media item is playing).
  - Play fullscreen.
- Set the **Recurrence** Pattern:
  - **One Time**– this will allow you to choose the day to have timeslot recur.
  - **Weekly** (default)– selecting this allows you to choose the day of the week.
- Additionally, you can set your desired **Valid start** and **Valid end** dates parameters, the timeslot's **Start time** and **End time,** and whether or not the schedule should repeat.

If you are making edit to an existing time trigger, click **Edit**. This will appear to the right of the trigger's name in the **Time Triggers** tab.

Deleting Time Triggers

To delete a time trigger:

1. Go to the **Planning** Menu and select **Channels**.
2. Open the **Channel** you want to edit and click on the **View Schedule** link to the right of the name.
3. Choose the second tab, which is marked **Time Triggers**.
4. Each time trigger will have its own block of information. The Remove option is located in the column furthest to your right. Click on **Remove**.
5. The system will ask if you confirm the deletion. Click **Proceed.**

Using Event Triggers

An event trigger is a way of starting a specific playlist for a player as the result of an external input. This is done through the use of control scripts.

They are created externally, and must be uploaded into Content Manager.

To upload a control script to Content Manager:

1. Go the **Content** Menu and select **Media.**
2. On the screen that appears, select **+New**, and then choose Media Upload.
3. Click on the **Add** button under files to place your script(s) in Content Manager. If you need to delete script(s) for any reason, choose **Remove**. If you do not choose a path to save the file to, it will be saved to the 'root' directory of your Content Manager. To save it to a specific place, click **Select** and find the folder.
4. Once you have done this, click **Upload**.

Once these scripts are uploaded, they appear in the Media list tagged with Type: Windows Script. You can view all control scripts by expanding the **File Type** filter under the search text entry box and selecting the **Windows Script** entry. These scripts can be assigned to one or more channel by defining channel variables.

Using Variables

> ⓘ **Note:**
> Before you set up an Event Trigger on a Schedule, you must first set up a Variable(s) on a Channel. The Event Triggers tab is currently configured to not appear on a particular channel if no variables have been set up first.

There are three types of variables: Boolean, Integer and String, but only Boolean and Integer types can be used to trigger playlists. However, you can share String variables between your Control Script(s) and Scala.

Creating a Variable

To create a variable:

1. Go to the **Planning** menu and select **Channels**.
2. Choose the channel you want to add a variable to and click on **Properties**.
3. In the Variables tab, click **Add** to create a new variable. If you have have previously created a variable in a particular channel, click **Add More** to do so.
4. Set the name, variable type and control script. Once you have typed and moved to setting another property, the variable name you have created will change to look similar to this: *Channel.Name*.
5. Repeat as desired to add all of your variables.
6. Once you have done so, click either **Save Changes** or **Save and Close** to exit.

To delete a variable, click **Remove**, which is located in the far right column of the variable's information. Doing so will instantly delete the variable.

Using Event Triggers

In order to create an Event Trigger you need the following:

- Channel with one or more Frames.
- Playlist scheduled to play under normal conditions.
- Playlist to play when the trigger happens.
- Source of the trigger.
- Channel Variable defined in Channel Properties/Variables.
- Channel Script uploaded to Media and selected in Channel Properties/Variables.

The **source** is some external device, computer, file, etc. It is up to the **Channel Script** to handle the connection with the source. The Channel Script (written in Python, VBScript or JavaScript) watches the source and uses the **Channel Variables** to tell the Player when to run the trigger Playlist. Possible sources can include:

- Text files on shared folders or HTTP servers (file date change = trigger).
- Network messages (TCP, UDP or Multicast UDP).
- Web applications with an external API.
- Serial RS-232 COM ports.Adding an Event Trigger

Adding an Event Trigger

To add a new event trigger:

1. Go to the **Planning** Menu and select **Channels**.
2. Open the **Channel** you want to edit and click on **View Schedule** link to the right of the name.
3. Choose the second tab, which is marked **Event Triggers**.
4. If you have not created any previously, click on the **Add** button. However, if you have created a trigger previously, the button will say **Add More**.
5. On the screen that appears, choose the variable you would like to use.
6. Select one of your Playlists. If you already have one selected, and would like to use a different one, select **Change** to do so.

7. Set the parameters in the Options section.
    a. You can set the trigger to play some or all of the items in the selected playlist. You are also able to set a repeat trigger response based on the type trigger you are using. These types will be discussed further below.
    b. Also, you can set whether or not you want the player to: be controlled by Third Party applications, use Audio Ducking, or be fullscreen.
        • Audio Ducking is a player's ability to turn down the volume of other audio (typically background audio tracks) when another media item is playing.
8. Once finished, click **Create**.
9. Once you have finished, click either **Save Changes** or **Save and Close** to exit.

Editing a Event Trigger

To edit a trigger:

1. Go to the **Planning** Menu and select **Channels**.
2. Open the **Channel** you want to edit and click on the **View Schedule** link to the right of the name.
3. Choose the second tab, which is marked **Event Triggers**.
4. Find the trigger you want to modify and click **Edit,** which is located to the right of the name of the trigger.
5. Make your changes and click **Update.**
6. Once you are finished, click either **Save Changes** or **Save and Close** to exit.

Deleting a Event Trigger:

To delete an event trigger:

1. Find the trigger in your list and click **Remove**, which is located in the far right column of the variable's information.
2. The system will ask if you are you want to remove the trigger. If you are, click **Proceed**.
3. Repeat as needed.
4. Once you have make all your deletions, click either **Save Changes** or **Save and Close** to exit.

Understanding Trigger Types

Triggering on Boolean Variables

A Boolean based trigger is used when you want different content to play so long as a certain condition is true. For example, if you had a sensor in front of your screen, and you wanted special content to play when a person was present, returning to the original content when the person departs, use a boolean-based trigger.

They are based on boolean channel variables. These variables only allow the changing of the Playlist. You cannot make changes to the number of items you wish to play or the Repeat Trigger Response. However, you can edit whether the Playlist is: controlled by a Third Party app, has Audio Ducking enabled or is set to be Full Screen. Third party apps can only be set by the Administrator.

Here you select a playlist to play when the Control Script changes the Boolean value from false to true (or 0 to 1).

Notice that under the heading **Repeat Trigger Response**, the value is set to **Play While On**, which means that the playlist specified will continue to play in a loop until the control script changes the channel variable back to false or 0. At that point the playlist is ended immediately, and the player goes back to playing its regular timeslot.

Triggering on Integer Variables

An Integer-based trigger is used when you want different content to start whenever a certain type of change happens. For example, if you want a vending machine to display a message whenever a coin is inserted, use a integer-based trigger. They are based on integer channel variables.

Like Boolean channel variables, you can select the playlist that will play when the control script has changed the channel variable. You can make the same edits to Third Party apps, Audio Ducking or Full Screen that you can with Boolean Triggers.

Any change in the value will cause the playlist to start, and the player normally goes back to playing its regular timeslot after the playlist has played a single time.

If the value changes again before the playlist has finished once, you have four behavior options to choose from by setting the Repeat Trigger Response:

1. **Ignore if already playing:** Player ignores any changes to the channel variable and continues to play the playlist to completion.
2. **Restart upon change:** Player will immediately restart the playlist from the beginning and attempt to play until completion every time the channel variable is changed.
3. **Loop until unchanged:** If one or more triggers happen before the playlist ends, then the playlist loops once instead of ending. Triggers in subsequent loops follow the same logic.
4. **Loop once per change:** For each trigger that happened while the playlist is playing, another loop of the playlist is added.

Distributing Content

Depending on your needs, distribution is a way to get your content from Content manager to your Players in an efficient manner within large

volume settings. Large scale networks may make it necessary for you to leverage a Distribution Server to populate the objects in your Content Manager to your Players. However, this feature must be properly installed and configured, and you must have the proper license to use it.

Content Manager provides two types of distribution servers:

- **Point-to-Point:** Generic distribution server type. The Distribution server that ships with Content Manager defaults to this type and is named Main.
- **Broadcast Server**: Used for customers who need to send out Content via a Broadcast Network. This allows for you to use either IP Multicasting, File Delivery, or the HughesNet (used for satellite broadcast distribution) driver to push out your content.
- **IAdea Bridge Server**: Used with the older IAdea SD and HD Players and Digital Signboards, but NOT the IAdea Android Players that Scala has certified. A list of devices, that can be used with Bridge Server is located here. More detailed information about Bridge Server itself and the Players that can be used can be found on the IAdea website. Bridge Server functions similar to a Point-to-Point Server.

You may also need to distribute content, but are unsure of when it will be used. **Non-Scheduled Content** allows for you to have objects stored in Content Manager for use at a later date. An example of non-scheduled content is icons to be used for a weather app. (The sun icon can't be scheduled to play all the time, and we don't know in advance exactly when it should be played).

Distribution via a Broadcast Server

Go to the **Network** menu, and select **Distribution**, you will see your list of Broadcast Server(s). Select the server you want to edit and click on **Properties** to make changes in any of the tabs. When you have finished, click either **Save Changes** to commit changes, or **Save and Close** to commit changes and exit the window.

Properties Tab

- **Name and Description:** provides the information you using to identify your Distribution Server.
- **Broadcast Settings:** you are able to make changes to:
  - **Driver Type:**
    - **File:** Send data via a file.
    - **HughesNet:** Use the HughesNet satellite service to send data.
    - **IPMulticast:** Set of IP addresses that allow you to send data to multiple hosts over a private network.
    - **IPv6:** Version of MultiCast configured for the IPv6 protocol.
  - **Plan Delivery:**
    - **Content Manager Direct:** Broadcast Server connects into Content Manager to get its instructions. If you select this option, a field marked Polling Interval (min) will appear. This field allows you to set how often your Content Manager will check for a new plan.
    - **Push to Broadcast Server**: Content Manager delivers the instructions to the Broadcast Server. For Server Address, specify the local folder or FTP location where the Broadcast Server can be reached. For FTP folders, use the syntax *ftp://user:password@hostname/path*
  - **Log Level:**
    - **Normal:** Default level of information provided by the logs. It is the default setting and should always be used when possible.
    - **Diagnostic:** Level used to help find and diagnose an issue. Should not left on for an extended period of time, as it will consume network resources rapidly.
    - **Debug:** Level used to solve an issue. This should not be left on for an extended period of time either, and also should be used unless instructed by a Support professional.
  - **Player Broadcast cache size (MB):** Amount of space the server will use to store Broadcasts.
- **Network Monitoring Settings**
  - **Player Heartbeats**: Can either be enabled or disabled.
    - **Player Heartbeat rate (min):** Frequency with which Content Manager will check on a Player. The default is 1 min.
    - **Player Heartbeat Overdue After (min)**: Period of time after which a Player's Heartbeat is considered overdue if has not been received by Content Manager. The default is 5 min.
    - **Plan Status Interval (min)**: Period of time at which the server will look for a new plan. The default is 1 min.
  - **Log Upload**: Can either be enabled or disabled.
    - **Max logfile age (days):** Amount of time your Content Manager will keep your log files. The default is set to 7 days.
- **Playback Audit Settings**
  - **Playback Audit Log Uploads:** Can either be **Enabled** or **Disabled**.
    - **Upload Frequency:** Determines the frequency with which the reports will be run. Can either be set to **Nightly** or **Hourly**. It is recommended that Nightly be used to cause less stress on your Player Network, as running reports on a more frequent basis utilizes more network resources.
    - **Max database age (days):** Sets the number of days your report database will be kept. The default is 90 days, but can be set to a time period length of your choice.

Driver Options

What you will see in this tab will depend on what **Driver Type** you selected in the **Properties** tab.

Driver Type: File Delivery

When you select the File Delivery driver, you can set the following options:

- **Package Upload URL:** Specifies where the package file is uploaded. Use a full URL in the following format: *ftp://username:password@h*

ostname:portnumber/folder.
- **Resume FTP upload supported:** Can be set to either **yes** or **no**.

Driver Type: HughesNet

When you select the HughesNet driver, you can set the following options:

Network

- **Package Upload URL:** URL where broadcast packages are to be uploaded to the HughesNet Enterprise Package Delivery Server. Please use a full URL in the following format: *ftp://username:password@hostname:portnumber/folder.*
- **Resume FTP upload supported:** Allows you restart interrupted FTP downloads. Can be set to either **yes** or **no**.
- **XML Interface URL**: URL to the XML status interface of the HughesNet server. Please use a full URL in the following format: *ftp://userna me:password@hostname:portnumber/folder.*
- **Best Effort Mode**: Data is delivered at an unspecific variable bit rate and delivery time, based on the network's traffic load. can be either **enabled or disabled**. When using this mode, the number of times to re-transmit the data packets defaults to 3.
- **FEC Overhead (%)**: Percentage of Content's Manager overall bandwidth that will be used to allow the transmitter (data source) to send redundant data and the destination (data receiver) to recognize only the data that contains no errors. The default is set to 0, but values can be set up to 100 percent.
- **Status Delay (sec):** Amount of time the system can delay between attempts on status queries sent to the PDSender. The default is set to 60. Valid values are 1 second, to 3600 (1 hour). If not specified, a default delay of 60 seconds is used. It is necessary because querying the server for package delivery and per-player confirmation status requires sending XML queries that require CPU time and I/O bandwidth on the server. Excessive polling could cause the server to become bogged down, particularly if packages are addressed to large sets of players. Hughes recommends limiting polling frequency to 1 minute per package, but larger values may be needed if many packages are sent or sent to many receivers. Smaller values may be used if the PDSender server and return bandwidth to the Scala Broadcast Server permit, and the customer wants the benefits of more timely status updates.

Account

- **Source Client:** Unique name assigned by the Hughes service provider. When multiple users share time on a PDSender, each requires a unique source client name, assigned by the Hughes service provider.
- **Client Key:** Unique password required by the Hughes service provider. There is a password that is optionally required, if the system is configured to require it.
- **Destination Address:** Use a full URL in the following format: *ftp://username:password@hostname:portnumber/folder.*It can be set to either **Group** or **Community,** but group is set as the default value. Group is the value recommended by Scala, but is required that the user has also entered the Hughes specific broadcast identifier for each receiver.
- **Destination Client:** User assigned name that has been associated with a user assignable folder on the destination PC. Rather then delivering to a specific folder, the system delivers to a destination client, and on the receiving software associates that name with a folder.
- **PDSender DTD:** Path on the PDSender server where the XML DTD's are stored. Unless specified, this will default to: C:\Program Files\Hughes NetworkSystems\PDSender\sfs\dtd\pd\1.0.
- **Report Email**: Email address where reports for each package will be sent. The format, and delivery time of these reports is a function of the Hughes Package delivery systems.

Driver Type: IP Multicast

When you select the IP Multicast driver, you can set the following options:

Network Options

- **Group IP:** Multicast group IP address that this server will transmit on.
- **Group port:** UDP port number this server will transmit on.
- **Server Transmits on IP:** If the server has multiple IP addresses, use this field to specify the IP address that is used when sending transmissions. You can leave this field blank if the server has only a single IP address.
- **Server listens on port:** Port the server listens for incoming connections. The default is set to 40000.
- **Packet size (bytes):** Size of the multicast packets sent by this server. This value needs to be smaller than the MTU size of the network. The default is set to 576 (bytes).
- **Time to live:** Lifespan for packets sent by this server. Is not defined in time, but instead by a number set by the user. The default is set to 128.
- **Bandwidth limit (kbps):** Maximum data rate at which this server will broadcast. The default is set to 1024.
- **Control interval (KB):** Interval at which broadcast-control messages are sent. The default is set to 100.
- **Control redundancy:** Degree of redundancy for control messages. The default is set to 3.

Broadcast Confirmation Options

- **Use Confirm Mode:** Method of receiving confirmation that data has been received. The Players communicate the missing data. This setting requires there backchannel TCP/IP connection and a server to support it. It can be set to either **yes** or **no**.
- **Cumulative Retransmits:** Sets a limit on the amount of data the Broadcast Server will re-send per job. This setting can be important if you are trying to limit the amount of bandwidth used to re-send data to Players with issues receiving broadcast data. For example, if you set the value to 3, the Server will re-send three (3) times the job size before giving up on the transmission. The default is set to 0

(infinite).

- **Transmit Retries Per Player**: Number of broadcast transmission failures in a row a player will allow before the Player is marked as failed when receiving data. The default is set to 3.
- **Query Retries Per Player**: Number of tries Broadcast Server will make querying the Player for a status before considering it to have an issue, and marking it failed. The default is set to 3.
- **Tolerated Data Loss (%)**: Limit on the amount of data the Broadcast Server will send to any Player, as long as the query and data retry limits have not been exceed. The default is set to 100.
- **Player Response Timeout (sec)**: Length of time the server will wait for Player to respond to its query before marking the player as having an issue, if the Server gets no response. The default is set to 30 .
- **Max Simultaneous Queries**: Maximum number of players to query simultaneously. Setting a maximum can eliminate overloads caused by too many simultaneous query responses. The default is set to 0 (infinite)
- **Automatically Retransmit in Background:** Allows you to automatically retransmit data and confirmation (if using confirmed delivery mode) if no other broadcasts are busy or incomplete. It can be set as **enabled or disabled.**
- **Use Data Redundancy:** If Use Confirm Mode is set to No, this is will be the only option that appears under this section with the prior **Automatically Retransmit in Background option**. It is the degree of redundancy for data messages. The default is set to 3.

Driver Type: IPv6

When you select the IPv6 driver, you can set the following options:

Network Options

- **Group IP:** Multicast group IP address, which must be in IPv6 format, that this server will transmit on
- **Group port:** UDP port number this server will transmit on.
- **Server Broadcast Interface Index:** Used when it necessary to pick a port from which to send data packets. Depending upon a number of factors, they are either 0 indexed or 1 indexed.
- **Server listens on port:** Port the server listens for incoming connections. The default is set to 40000.
- **Packet size (bytes):** Size of the multicast packets sent by this server. This value needs to be smaller than the MTU size of the network. The default is set to 576 (bytes).
- **Hop Limit:** Lifespan for packets sent by this server. Is not defined in time, but instead by a number set by the user. The default is set to 128.
- **Bandwidth limit (kbps):** Maximum data rate at which this server will broadcast. The default is set to 1024.
- **Control interval (KB):** Interval at which broadcast-control messages are sent. The default is set to 100.
- **Control redundancy:** Degree of redundancy for control messages. The default is set to 3.

Broadcast Confirmation Options

- **Use Confirm Mode:** Method of receiving confirmation that data has been received. The Players communicate the missing data. This setting requires there backchannel TCP/IP connection and a server to support it. It can be set to either **yes** or **no**.
- **Cumulative Retransmits:** Sets a limit on the amount of data the Broadcast Server will re-send per job. This setting can be important if you are trying to limit the amount of bandwidth used to re-send data to Players with issues receiving broadcast data. For example, if you set the value to 3, the Server will re-send three (3) times the job size before giving up on the transmission. The default is set to 0 (infinite).
- **Transmit Retries Per Player**: Number of broadcast transmission failures in a row a player will allow before the Player is marked as failed when receiving data. The default is set to 3.
- **Query Retries Per Player**: Number of tries Broadcast Server will make querying the Player for a status before considering it to have an issue, and marking it failed. The default is set to 3.
- **Tolerated Data Loss (%)**: Limit on the amount of data the Broadcast Server will send to any Player, as long as the query and data retry limits have not been exceed. The default is set to 100.
- **Player Response Timeout (sec)**: Length of time the server will wait for Player to respond to its query before marking the player as having an issue, if the Server gets no response. The default is set to 30 .
- **Max Simultaneous Queries**: Maximum number of players to query simultaneously. Setting a maximum can eliminate overloads caused by too many simultaneous query responses. The default is set to 0 (infinite)
- **Automatically Retransmit in Background:** Allows you to automatically retransmit data and confirmation (if using confirmed delivery mode) if no other broadcasts are busy or incomplete. It can be set as **enabled or disabled.**
- **Use Data Redundancy:** If Use Confirm Mode is set to No, this is will be the only option that appears under this section with the prior **Automatically Retransmit in Background option**. It is the degree of redundancy for data messages. The default is set to 3.

Schedule

This allows you to set the mode of plan generation, either to **Manual** or **Scheduled**.

Plans can be generated for all active players on a schedule, which is based on any of the following:

- **At Interval**: Timed intervals with the option of setting a *Starting At* time. Selecting a specific Player group or all players is an option as well.
- **Daily:** Specific time each day.
- **Weekly:** Specific time on a specific day of the week.

Media Distribution Monitor

This tab shows a list of the media items you are currently distributing. Here you may inspect the media item and see which Players have downloaded or still need to download the media item.

Plan Generation History

This tab shows a list of the plans generated and their status.

- **Submitted:** When the plan was generated.
- **Type**: Whether the plan generation was automatic or manually generated.
- **Result:** Status of the transfer.
- **Time to Generate:** Indicates the time taken to generate the plans.
- **Transfer:** Shows the amount of data transferred.
- **Files:** Number of files associated to the transfer.
- **Players:** Number of Players that plans were generated for.

Broadcasts

This tab will list all of the broadcasts the server has transmitted. You will also be able to view the Priority, State, Transfer and the number of Players that have confirmed the Transmission.

Checking the box next to each Broadcast will allow you to view the following:

- **Details**: Provides the task details for the broadcast, including the status, duration and result of each task.
- **Show Media:** Lists any included media for the Broadcast. If there are excluded media, they will be listed in a separate tab.
- **Show Players:** Lists any included media for the Broadcast. There are also tabs that list any excluded, confirmed or unconfirmed players.
- **Abort**: Allows you to end the broadcast, by clicking **Proceed** in the box that appears.
- **Edit/Rerun**: Allows to make changes to the Broadcast or repeat it, if necessary.

It is currently not possible to check multiple Broadcasts to retrieve and edit their details.

If you need to abort multiple broadcasts, select those you need to remove by checking the box next to them and selecting **Abort**.

Understanding the Dashboard

The Broadcast Dashboard contains icons that will appear while working in this section of Content Manager. The following table offers an explanation of these icons enabling you to take appropriate actions.

Icon	Where	When/How
⚠️	Distribution->Properties->Broadcast	Broadcast aborted
🗑️	When you generate plan for broadcast -> Broadcast Package Building	Manual exclusion of media
📡	When you generate plan for broadcast -> Broadcast Package Building	Media ready to send
🕐	Distribution->Properties->Broadcast	Pending for broadcast
📡	Distribution->Properties->Broadcast	Broadcast is transmitting the data
✅	Distribution->Properties->Broadcast	Broadcast completed successfully

Creating a Broadcast Server

To create a new broadcast server:
1. Click the **Distribution** button under the Network menu.
2. Click **New Broadcast Server** and fill in the form you see.
3. Be sure to make selections for driver type, plan delivery type, and log level. Your choices for these parameters, are explained in greater detail in the next section.
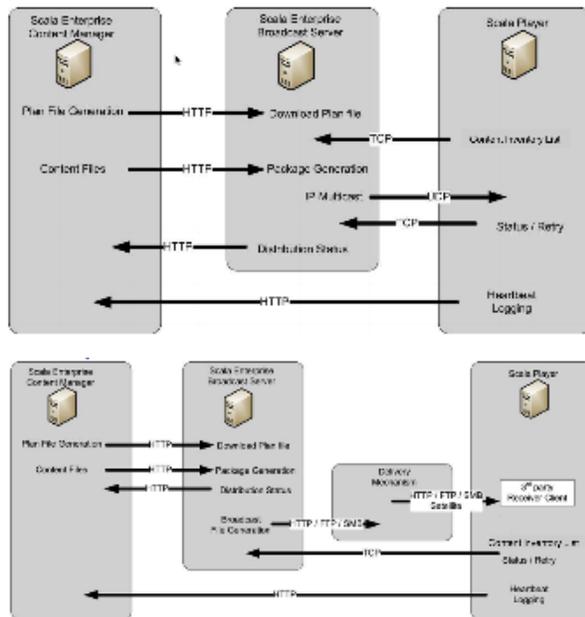4. Click **Create** when you are finished.

Hardware Requirements

If you are attempting to set up a Broadcast Server, please consult the Large Network Technical Specifications page for guidance on the hardware required to do so.

Data Flow

IP Multicast   **File Delivery**

Managing the Point to Point Server

If you are using the Main (Point-to-Point) server, using the **Distribution** screen under **Network**, you can make edits to the server by selecting it and clicking on **Properties**. The page that appears has three tabs that allow you to modify the server: Properties, Schedule and Media Distribution Monitor. The fourth tab, Plan Generation History, provides a list of the plans generated by the server.

Properties Tab

The settings in this tab should be tuned to meet the needs of your network.

Network Monitoring Settings

Heartbeats and Log Uploads can be enabled or disabled here.

If these are enabled for heartbeat, you can:

- Set their run frequency–default is 1 min.
- Define when a heartbeat is considered overdue (should it fail)–default is 5 min.
- Plan Status Interval: frequency Players send updates on file download statuses to Content Manager.

If these are enabled for Player log uploads, you can:

- Set the max logfile age (days), which governs the amount of time your Content Manager will keep your log files. The default is set to 7 days, but can be adjusted to suit your needs.

Playback Audit Settings

Playback Auditing can be set up on this page as well.

- **Enabled or Disabled**–use this option to turn Auditing on or off.
- **Upload Frequency**–determines the frequency with which the reports will be run. Can either be set to **Nightly** or **Hourly**. It is recommended that Nightly be used to cause less stress on your Player Network, as running reports on a more frequent basis utilizes more network resources. These uploads will only happen if connectivity from the Player to the Content Manager is available in Advanced Configuration Options for Player.

Schedule

This allows you to set the mode of plan generation, either to **Manual** or **Scheduled**. Content Manager sets the default to be scheduled every 10 minutes. If you select Manual, plans are only generated on demand.

Plans can be generated for all active players on a schedule, which is based on any of the following:

- **At Interval**: Timed intervals with the option of setting a *Starting At* time.
- **Daily:** Specific time each day.
- **Weekly:** Specific time on a specific day of the week.

To create a new schedule, click on **New Schedule,** and choose one of the three types described above, and fill in the parameters (ex., if you choose Daily, fill in the time of day you want to schedule). Once you are done, click on **Add Schedule**, and when you are finished **Save Changes** or **Save and Close** to exit.

Content Manager also allows to make changes to the features.xml file that allows for better control over pre-caching plan generation.

```
<feature>
                <name>PlangenPreCacheChannels</name>
   <enabled>true|false</enabled>
</feature>

<feature>
                <name>PlangenPreCacheMediaItems</name>
   <enabled>true|false</enabled>
</feature>

<feature>
                <name>PlangenPreCachePlaylists</name>
   <enabled>true|false</enabled>
</feature>
```

Pre-caching is enabled by default. If one of the features is not defined, its pre-cache is enabled. To disable pre-caching completely, all three features must be present and disabled.

Media Distribution Monitor

This tab shows a list of the media items you are currently distributing. Here you may inspect the media item and see which Players have downloaded or still need to download the media item.

Plan Generation History

This tab shows a list of the plans generated and their status.

- **Submitted:** When the plan was generated.
- **Type**: Whether the plan generation was automatic or manually generated.
- **Result:** Status of the transfer.
- **Time to Generate:** Indicates the time taken to generate the plans.
- **Transfer:** Shows the amount of data transferred.
- **Files:** Number of files associated to the transfer.
- **Players:** Number of Players that plans were generated for.

Managing the IAdea Bridge Server

For a list of Players that can be used with IAdea Bridge Server, click here.

If you go to the **Network** menu, and select **Distribution**, you will see your IAdea Bridge Server. Select it and click on **Properties** to make changes in any of the tabs. When you have finished, click either **Save Changes** to commit changes, or **Save and Close** to commit changes and exit the window. The page that appears has four tabs that allow you to modify the server: Properties, Schedule, Sub-Networks, and Media Distribution Monitor. The other tab, Plan Generation History, provides a list of the plans generated by the server.

Properties Tab

This section allows you to modify the common properties of the IAdea Bridge Server.

- **Name and Description:** Provides the information you using to identify your Distribution Server.
- **Network Monitoring Settings**
    - **Plan Refresh Interval (min):** Period of time at which the server will look for a new plan. The default is 1 min.
    - **Log Level:**
        - **Normal:** Default level of information provided by the logs. It is the default setting and should always be used when possible.
        - **Diagnostic:** Level used to help find and diagnose an issue. Should not left on for an extended period of time, as it will consume network resources rapidly.
        - **Debug:** Level used to solve an issue. This should not be left on for an extended period of time either, and also should

be used unless instructed by a Support professional.

- **Minimum Schedule Expansion (days):** Minimum number of days a plan is expanded into raw format to conserve memory for the IAdea SD Player. Players must be allowed to refresh its plan within this period after the last schedule expansion. The default is 7 days.
- **Schedule Expansion Time:** Sets time of day at which schedule expansion is performed to lengthen the valid period of the translated plan. The default is 3 hours (03:00:00).
- **Plan Retry Interval (min):** Amount of time the Bridge Server will allow between retries of sending data. The default is 1 min. Can be set higher to avoid network congestion.
- **Player Heartbeat Interval (min):** Interval of time between Content Manager checks for the heartbeat of an individual Player. The default is 1 min.
- **Heartbeat Retry Interval (min):** Interval to retry sending a heartbeat signal after one fails. The default is 1 min.
- **Player Status Report Retry Interval (min):** Time interval to retry sending a plan status update after one fails. The default is 1 min.
- **Heartbeat Overdue After (min):** Period of time after which a Player's Heartbeat is considered overdue if has not been received by Content Manager. The default is 5 min.

- **Playback Audit Settings**
    - **Playback Audit Log Uploads**: Can either be enabled or disabled.
        - **Upload Frequency:** Determines the frequency with which the reports will be run. Can either be set to **Nightly** or **Hourly**. It is recommended that Nightly be used to cause less stress on your Player Network, as running reports on a more frequent basis utilizes more network resources.
        - **Max database age (days):** Sets the number of days your report database will be kept. The default is 90 days, but can be set to a time period length of your choice.

Schedule

This allows you to set the mode of plan generation, either to **Manual** or **Scheduled**. Content Manager sets the default to be scheduled every 10 minutes. If you select Manual, plans are only generated on demand.

Plans can be generated for all active players on a schedule, which is based on any of the following:

- **At Interval**: Timed intervals with the option of setting a *Starting At* time. Selecting a specific Player group or all players is an option as well.
- **Daily:** Specific time each day.
- **Weekly:** Specific time on a specific day of the week.

To create a new schedule, click on **New Schedule,** and choose one of the three types described above, and fill in the parameters (ex., if you choose Daily, fill in the time of day you want to schedule).

Sub-Networks

This screen will list any child servers, which have Players associated, that you create, and provide details on the following parameters:

- **Plan Generation Status**: Status of your current plan generation
- **Received Plan:** How many of your total number of player(s) have received the most recent plan
- **Transfer**: How much of the transfer is complete.
- **Remaining:** How much of the transfer is remaining
- **Next Plan Generation**: When the next plan will be generated by the server.

These servers can also be sorted by name in ascending or descending order. Clicking on the box next to the server name will allow you view the properties (name and description), Media Distribution Monitor and Plan Generation History, as well as the option to Delete the highlighted child server.

If you need to create a new server, click on **New IAdea Child Bridge Server,** and enter a name and description for the server. Click **Create** when you are finished.

Configuring IAdea Bridge Server

Bridge Server Can be used in either of two configurations:

- **Centralized Mode:** Bridge Server is co-located with Content Manager, and directly shares the Apache Tomcat server it. This is the simplest mode of operation and recommended for general applications.
- **Distributed Mode:** Multiple Bridge Servers are installed on separate computers as "site servers" near the players. This allows distributing the computation and communication load on the Bridge Servers to multiple server computers.

Media Distribution Monitor

This tab shows a list of the media items you are currently distributing. Here you may inspect the media item and see which Players have downloaded or still need to download the media item.

Plan Generation History

This tab shows a list of the plans generated and their status.

- **Submitted:** When the plan was generated.
- **Type**: Whether the plan generation was automatic or manually generated.
- **Result:** Status of the transfer.
- **Time to Generate:** Indicates the time taken to generate the plans.
- **Transfer:** Shows the amount of data transferred.
- **Files:** Number of files associated to the transfer.
- **Players:** Number of Players that plans were generated for.

Using Non-Scheduled Content

Non-scheduled Content is a way for to deliver content to one or more channels independently of any playlist. This is useful for reasons, such as delivering:

- A file(s) or files ahead of time that you know your players will need in the future (An example of this is icons to be used for a weather app--the sun icon can't be scheduled to play all the time, and we don't know in advance exactly when it should be played).
- A file(s) that are used by a VBScript or another scripting language not used in any playlist.

To designate your content as Non-Scheduled:

1. Create a playlist that contains all your non-scheduled content. Go to the **Planning** menu and select **Schedules**. Change the channel that appears, if it is not the one you want to use.
2. On the screen that appears, select the Non Scheduled Content tab and define a schedule.
3. Select a the Playlist that contains your non-scheduled content. Click either **Save Changes** or **Save & Close** to exit.

Keep in mind of the bandwidth considerations when marking one or more media items as non-scheduled content, especially if you are sending non-scheduled content to all your channels. You can very easily overwhelm your existing infrastructure if, for instance, you have 10 channels with 10 players on each channel and you mark a video file that is 1 GB in size as non-scheduled content.

Managing Network Devices

In this section, we will discuss what you need to know to set up devices to play your content, and keep your device network healthy.

Topics covered include:

- Reviewing the Player Dashboard
- Creating a Player
- Managing Player Groups
- Managing Player Metadata
- Managing Player Health

> **Note:**
> All hardware specific information related to supported playback devices can be found in the Player Manuals.

Reviewing the Player Dashboard

To get to the Player dashboard page, select the **Players** link under the **Network** menu in the top bar navigation. The page contains summary information on your Players, including their Type, Channel, Status and whether a plan has been downloaded. You can also create new Players from this dashboard.
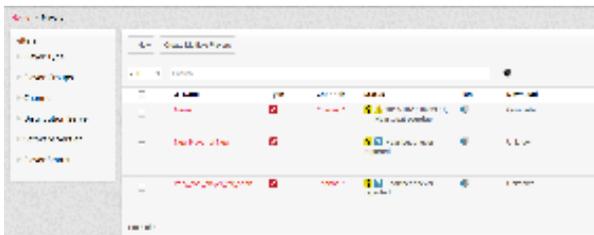
Managing the Players
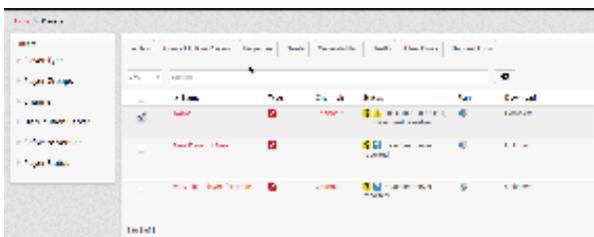
Selecting a Player will allow you to make changes to it, using the options listed in the menu at the top of the Player list. Here is an explanation of some of them.

- **Properties**: Make changes to any of the tabs explained here.
- **Generate Plan**: Generate a plan for the selected Player(s).
- **Health**: Show any issues (cleared and uncleared) the players are having.
- **Clear Errors**: Clears any errors for the selected Player.
- **Report**: Set your parameters and generate a report the selected player
- **Request Logs**: Yield the logs for the selected Player.

Clicking on the View Settings Icon ⚙ allows the user to change how the screen is displayed. This allows you to avoid things that you don't want to see on the screen.

Download: This column shows whether or not the plan download has completed. If it has not, it tells you how many items have yet to receive the plan.

Understanding the Dashboard Icons

There are icons on the Dashboard that will help you more easily manage your Players. The charts below offer a quick guide to the icons and what they mean.

Player Landing Page dashboard icons

Icon	Description	Icon	Description
❌	Player reported errors/warning	◣	Scala PC Player
✅	Player is healthy	▨	IAdea Player
📄	No plan ever generated	🔊	Scala Player Audio only
📄	Player got a new plan	S	Samsung Player
📄	Player has not received latest plan	🤖	Android Player
⚠️	Player heartbeat overdue	◉	Scala Enterprise Player for Chrome Devices
❓	No heartbeat	☎	Broadcast Distribution
🚫	Player is disabled	⋔	Point-Point Distribution
❓	Unknown player is active or inactive	▮-▮	Bridge Server Distribution

Creating a Player

Things to Know before Getting Started

There are two parts to setting up a playback device (which we will call a Player from now on) for use with Scala Enterprise Content Manager:

1. Create the Name and Settings of the player in Content Manager.
2. Configure the remote player to connect to Content Manager and pair it with the entry created in the previous step.

Players will need channels assigned to them. Before creating a Player within Content Manager, it is recommended you create the Channels you intend to display on the Player. You can assign them to the Player later.

Creating a Player in Content Manager is not enough. The playback device itself must also be properly set up to communicate with the Content Manager. After you create the Player in Content Manager with the steps below, you will also need to insure that the Player Configuration utility on the device is setup correctly.

You may also want to consider a Naming Convention for your Players when creating them, especially if you have a large number of Players in your network.

There are two ways to create a Player:

1. Individually.

2. In groups (note: this only works if all the players in the group are of the same type and naming nomenclature).

The individual approach will be described first, the group approach is addressed afterwards below.

Creating an Individual Player

1. Click on the **Players** link under the **Network** menu in the top navigation bar.
2. Click on the **New** button at the top of the panel.
3. Select the proper player type and click **Next.**

> ⓘ **Note:**
> All hardware specific information related to supported playback devices can be found in the Player Manuals.

The types of players shown will depend on the rights granted in your Scala license. They will be displayed in a list like the one below. There are two tabs: one for the Feature Licenses and the other for the Classic. Information on either these can be found by going to the L icense Functionality Matrix and choosing one of the two categories.

The full list of supported playback devices changes from time to time.

4. Identify your player by providing a name (and an optional description) for it. Depending on the player type and your system configuration, you may also need to pick the type of distribution server. Click **Create**. You have now created your Player. For information on the Properties screen, see the section called Understanding the Properties screen further down on this page.

Creating Multiple Players

If your player naming convention has a sequence, then you can take advantage of this by creating multiple players simultaneously and applying common attributes, such as Channel, in one operation.

1. Start by selecting **Create Multiple Players** from the menu bar.
2. Select the Player type you wish to create multiple players for and then fill in the dialog box form.
   In this example, 3 players will be created with the name starting with **Site Lobby** and then **###** will be replaced with **001**, **002** and **003** -

since the Start At is set to 1.

3. Click **Create.**
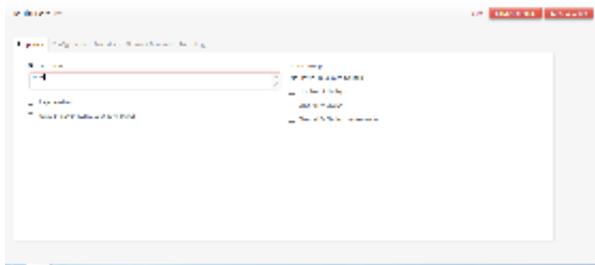
4. In the screen that appears, check the items you wish to edit on all players being created, then enter the desired values.
5. Lastly, select **Save and Close** and the resulting Player List will show your new players.
6. Review your created players individually and make any player unique edits you find necessary.

Understanding the Properties Screen

Whether you are creating one player or 30, you can make changes to the Properties, of your Player once you have created it.

The list of tabs on this screen, and an explanation of each appears below. Once you have finished making changes, select either click **Save Changes** or **Save & Close** to save them.

The Properties screen has the following list of tabs:

- **Player Properties**: Name, description, groups and channels of the Player. The Screen count field is also found in this tab. It can be used as a Multiplier for Playback purposes. You can also enable or disable the Player from this screen, or use it as a preview Player, a setting that can be adjusted by setting the option to **Yes**. If you wish to add your Player to a group, it can be done from this screen, as the list of Player Groups appears here. Timezone offset is available if your Player is a Samsung SSP Player, if for example, the server for the Player is in New York City, while the Player itself is located in Los Angeles, which is three hours behind. The settings can be adjusted in the following ways, at the next reboot of the Player:

    - **+/-**: the Player is either ahead of or behind the time of its associated server.
    - **0-12**: Number of hours in the time difference between the server and the Player. Default is set to 0
    - **0, 15, 30, 45, 60**: Number of minutes, which can be modified in 15 minute increments. Default is set to 0.

- **Status:** Current status of your Player. The contents of this tab cannot be edited. Information that is found in this tab include, the player status, its hostname and IP address, and the versions of it software and firmware.
- **Pairing:** Displayed only for the Samsung SSP. It contains the unique code that allows you to pair the SSP Player to Content Manager. The contents of this tab cannot be edited.
- **Configurations:** Make changes to any of these parameters, but only after careful planning when setting any or all of the following:
    - **Download threads:** Number of threads used by your Player to download content. (default value is 1)
    - **Minimum time to keep unused files (hours):** Amount of time the Player will hold onto unused files before purging them from the repository. (default value is 24)
    - **Log level:** Can be set to normal or diagnostic. Diagnostic may be helpful if you are trying to identify an issue, but will use your systems resources more quickly. It is recommended you use the default value of normal.
    - **Distribution Server**: Not everyone will use this. It is a server you have set up to provide content for your network. The kind will depend on the type of Player you are using (default value is Main–Point to Point). For more information on the types of Distribution Servers, please see Distributing Content.
    - **Delivery method**: Method by which your Players are receiving content. It will be either via an HTTP pull (directly to Content

Manager) or an external push (to Player or FTP). (default value is Content Manager Direct)
- **Polling interval:** Period of time at which the Player will poll the database for new content. The default value is set to 1 minute. Scala recommends being cautious when adjusting this interval. Doing so should be based upon the scale your network.

- **Metadata**: Adding this may be helpful in playback. For a more detailed discussion of either type, please see Managing Media Metadata or Managing Player Metadata.
- **Network Bandwidth Throttling:** Only available for Scala PC and Android Players. This is done through the use of the software, and can be used to decrease the speed of downloads to your Players. To make any throttling you set up in the Player more effective, Scala recommends thorough planning, making sure that proper network partitioning and distribution interval planning have been done ahead of time. Using plan generation effectively may negate the need to use bandwidth throttling as frequently.
- **EX Modules:** Select which, if any of the EX Modules you want the Player to use.
- **Logs:** View the Player logs. The amount of logs available depends on what you have set as the default amount of time (set in days) on your Distribution Server.
- **Inventory:** Shows the items that have or have not been downloaded by the player. It also shows the timestamp of the last plan revision created for the player.
- **Health:** Lists the errors reported from the players. These errors can be cleared out using the "clear Error" button while selecting the Player on the player landing page.

Managing Player Groups

A Player Group can be beneficial, as they allow you to have conditional playback of media items and playlists, as well as for generating a plan for a player group. Using Player Groups can also be beneficial in setting up maintenance jobs, as they can be configured to select Players by Group.

Creating a Player Group

To create a Player Group:

1. Go to the **System** menu and select **Management,** and then select **Player Groups** in that category.
2. On the screen that appears, click **New**.
3. Enter a name and (an optional) description and click **Create.**
4. The Properties screen will appear, and from there you will be able to edit the name and description of the group. Make any changes, and click either **Save Changes** or **Save and Close** to exit**.**

Adding Players to a Player Group

To add Players to a group:

1. Go to the **Network** menu and select **Players.**
2. Select the Player you wish to edit and click **Properties**.
3. In the Properties tab, select the Player Group(s) you want to a particular player to and click either **Save Changes** or **Save and Close** to exit.

Assigning Multiple Players to a Player Group

1. Go to the **Network** menu and select **Players.**
2. Select the Players you wish to edit and click **Edit Multiple**.
3. In the Properties tab, check the box next to Player Groups, and add the player the group(s) you would like.
4. Once you have made your changes, click either **Save Changes** or **Save and Close** to exit.

Deleting a Player Group

To delete a Player Group:

1. Go to the **System** menu and select **Management,** and then select **Player Groups** in that category.
2. On the screen that appears, select the group(s) you want to remove, and click **Delete**.
3. The system will ask if you want to delete the group(s), and also where they are used in Content Manager, as in the example below.
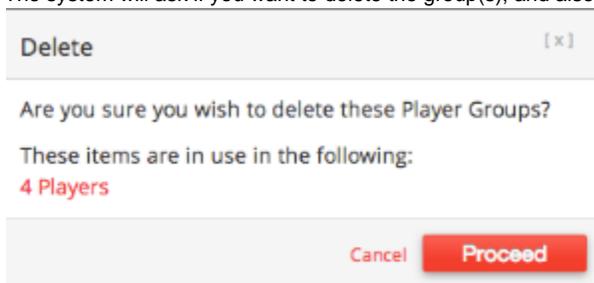
4. If you would like to remove the Player Group(s), click **Proceed.**

Managing Player Metadata

The primary usage of Player Metadata is in creating conditional playback rules for media items in playlists and sub-playlists. A secondary use exists for Channels, which can be applied so that Channels cannot be assigned to the wrong player device.

Adding Player Metadata

To add player metadata, do the following:

1. Under the **System** menu, choose **Management** and select **Player Metadata**.
2. Click **+ New** at the top of the page.
3. In the box that appears, enter a name and choose both the data and value types and click **Create** when you have finished.

Understanding Data and Value Types

There are three data types:

- **String**: Simple Text strings that can be entered as any text value or restricted to a "pick list."
- **Integer:** Whole Numbers.
- **Boolean:** Also known as logical (true/false represented as Checked/Unchecked).

There are two value types:

- **Any**: Any value.
- **Picklist:** Chosen from a list.

Metadata values can be sorted either in ascending (A to Z) or descending (Z to A) order in the menu above the list of metadata. They can also be dragged and dropped into your the order of your choosing as well.

You can also edit the properties of the metadata (only the name is editable) and delete them. Selecting a player metadata value by checking the box next to it allows you to edit the properties of the value or delete it. Multiple editing of properties is not permitted, but multiple values can be deleted. If you choose to delete player metadata values, Content Manager will confirm whether or not you want to remove the selected item(s). Click **Proceed** if this is the case.

Adding a Picklist

To add a new picklist:

1. Go to **System** and then choose **Management**.
2. In that menu, select **Player Metadata**.
3. Click on **+ New** at the top of the screen that appears.
4. In the screen that appears, enter a name and choose either **String, Integer or Boolean** as the **Data Value Type.**
5. Under **Value Type**, choose **Picklist**.
6. Choosing String or Integer will allow you to set a pick value. If you want to add more than one, click **Add More**. These values can also be sorted in Ascending or Descending order.

Adding a picklist, allows you to create Smart Playlists using the metadata, such as in the example at the beginning of this section.
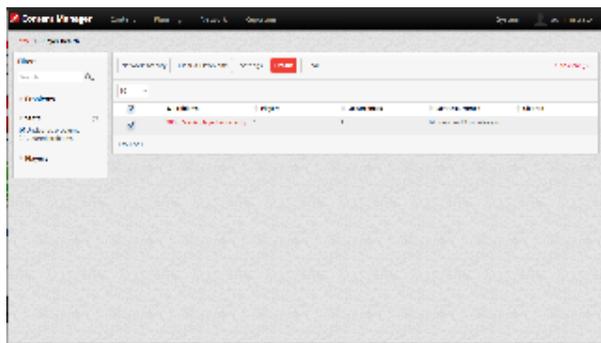
Monitoring Player Health

The **Player Health** summary screen allows the user to review any errors that have been reported by player(s) back into Content Manager.

Here, the user can view the details of an error, resolve it, and clrar it from the list.

This screen can be accessed by clicking on the **Network** menu and selecting **Player Health**.

Monitoring Players

Configured players running a scheduled plan can be monitored within this area. Using the left hand column, you can search for problems, or filter down based on problem group, type, or player.

Issues listed in this screen are sequenced from the most current point in time backwards through history. Even if you have cleared issues from the main view, you can still search and access these cleared issues as needed to better diagnose a persistent issue.

This screen is focused on identifying issues of concern for you to manage, but you can also click **Network Activity** to see all events being reported back into Content Manager including player Heartbeats.

Clear and Clear All Problems enables you clear any issues a Player may have. Clear allows you to remove the errors individually, while Clear All will do so en masse. Whether you are clearing the problems for one or many Players, Content Manager will warn you that, due to potential volume, the operation may take some time.

Clicking **Settings** allows you to:

- **Configuration Tab**: Make changes to how you clear problems. The Automatically clear problems after (days) is set by default to 7, and the automatically delete problems after (days), is set by default to 30.
- **Auto-cleared List**: Some errors are just noise. You can suppress them by adding them to the list found in this tab. It will count the error without presenting it in the UI.

Making changes to either of these may better help your Content Manager run more efficiently.

Network Activity

Clicking on this option gives you the ability to see exactly what your Player(s) have been recently uploading and downloading. The list currently

contains a maximum of fifty (50) entries. There are four columns that show this information.

- **Message Type:** Visual representation of the action that has occurred (e.g., Heartbeat, Error, PAM log Uploaded, etc.)
- **Player:** Lists the player name as defined in the **Network > Players** list.
- **Time:** How recently the specific event occurred.
- **Message:** Lists a text based message of the action that has occurred (e.g. Heartbeat Received, Error Received, Log Received, etc.)

Problem Details

This screen can be reached by selecting a player from the list and clicking **Details.** There are two tabs: Details, and Reported By.

The **Details** screen provides information about a problem that has occurred on one or more players. This information should be used to diagnose a problem with a player on your network. A problem detail contains:

- **Summary:** Type of problem that has occurred.
- **Description:** Explanation of the problem.
- **Details:** Information about the error, which can be useful when contacting Scala Technical Support.

The **Reported By** Tab provides a list of which Player(s) are showing the error, the frequency they have shown it, as well as the first occurrence and the most recent occurrence of the error.

Understanding the Player Health Dashboard

The following icons, which are followed here by a brief description, will appear on the Player Health screen when clicking into the **Network Activity** screen. This screen will show all the activity a Player generates, including but not limited to what is found in this chart.

Icon	Description	Icon	Description

❌	Player reported errors/warning		Player transmission client started
✅	Player is healthy	▶	Player has gone from active to inactive
	No plan ever generated	▷	Player has gone from inactive to active
	Player got a new plan		Player checked for plan
✔	Inventory has Completed		Player uploaded a file e.g log, error msg

Heartbeat

You can configure a player to send a Heartbeat at predetermined intervals so the system will recognize that it is still operating or has encountered errors.

If the player does not send a heartbeat signal at a predetermined time, an email alert can be configured to be sent to one or more users. As a result of this notification, you might choose to create a new maintenance task to attempt to repair it (e.g. rebooting your players weekly. It should be noted that Scala recommends rebooting your players on a regular basis.).

Diagnosing Players

By default, this Player Health screen lists every problem that has not been previously cleared.

To view more details about a problem, select the problem, and click the **Details** button.

Within the Player Health Details view, you can select the **Reported By** tab to see player specifics for the players that are reporting this error.

Clearing Problems

To clear a problem from the Player Health pane, select the problem(s) and click the **Clear** button. Clearing the problem in Content Manager does nothing to fix the problem, it simply removes the item from the **Uncleared Problems** list allowing you to focus on new incoming problem alerts. You must resolve the problem on your player, otherwise the problem will most likely reappear in Content Manager again.

To clear all problems, click the **Clear All Problems** button.

Problem Codes

If there is an error with a Scala application report errors with problem codes. Found in the error is what went wrong, and a consequence. For example, an error might be "File not found", and the consequence is "Your script did not play correctly."

Please be aware that not every problem can occur in typical configurations. Certain problem codes are documented here, but may never occur in the field, or may never occur in your particular configuration.

Scala Codes

The following is the List of Scala Problem Codes.

Code	Error Text	Consequence	Explanation	Alarmable?	Alert or Warning?
0	Unknown problem	Unknown problem	No specific problem code was available.	Yes	Alert
1	Internal problem	Internal problem. Software is not functioning properly. Rebooting is suggested. Please contact Scala Technical Support.	Indicates there is an internal problem in the software.	Yes	Alert

2	Rebooted due to problem	Software was rebooted due to an unhandled failure. Please contact Scala Technical Support.	An internal problem in the software led to a reboot.	Yes	Alert
3	Abnormal termination	<ProductName> terminated abnormally. This may indicate that the software failed to start, or encountered a driver error or other condition that caused it to fail. The Windows application logs, or Dr. Watson logs may contain more details.	The watchdog detected that the application terminated unexpectedly and restarted.	Yes	Alert
4	Player not running	This <ProductName> is not displaying, because the Playback Module is not running. It may have failed to start or someone may have manually closed it. Playback will not resume automatically, and some intervention, like a Reboot command, is needed to resume playback.	Player graphical engine fails to start up.	Yes	Alert
5	Transmission Client not running	This <ProductName> cannot be contacted by Scala Content Manager, because the Transmission Client Module is not running. It may have failed to start or be misconfigured.	Player network engine fails to start up.	Yes	Alert
6	Script played incorrectly	Script "<ScriptName>" played incorrectly.	Indicates a general error playing back a script, including the failure to find Linked Content. (Where warranted, certain specific errors will have their own problem codes.)	Yes	Alert
7	Transmission Client not Admin	Some features, including Install System File and Install Software Update, may not work because Administrator-level account privileges are required.	Player transmission client detects some features may not work because administrative privileges are required.	Yes	Alert

8	Anonymous FTP allowed	There is a security hazard: the FTP server is configured to allow anonymous login.	An FTP server is detected that allows anonymous log in.		
9	Broadcast receive mis-configured	Broadcast transmissions cannot be received because of a configuration problem.	Receive Book reports an error with the configuration that will prevent the receive book from getting broadcast transmissions.	Yes	Alert
10	Broadcast receive failed	A broadcast job was not received because of insufficient resources. Note that it is possible, although unlikely, that the broadcast job will be received on a future attempt.	Receive Book reports an error getting a broadcast transmission due to lack of resources, most likely lack of disk space	Yes	Alert
11	No Transmission Client tray icon yet	The Transmission Client Module does not yet have a tray icon, because it is having trouble creating one. This problem is only a delay and will be reported again if it persists.	Player transmission client is having trouble creating its tray icon.		
12	No Transmission Client tray icon	The Transmission Client Module does not have a tray icon, because it failed to create one after repeated attempts.	Player transmission client gives up on creating its tray icon.		
13	Failed to delete unused content	Some disk space could not be re-used, because the <ProductName> failed to delete some files associated with old content that previously was discarded.	Player health reporting subsystem has given up sending heartbeat information.		
14	JPEG possibly corrupt	The image "<FileName>" may not display correctly because it is corrupt or invalid.	The JPEG library encounters a file that seems to be corrupt or malformed.		
15	Module failed to start	Scripts may play incorrectly because the <ModuleName> Module cannot be started. If applicable, please verify any hardware for the <ModuleName> Module, or verify the <ModuleName>> Module settings in the <ProductName> Configuration.	A Module has a problem starting. This will most likely occur when the Module cannot obtain the necessary resources (i.e. the serial port).	Yes	Alert

16	FTP port 21 in use	The <ProductName> cannot receive jobs, because the internal FTP server could not be started. The most likely cause of this problem is that a third-party FTP server is already running on this system. Recommend disabling the third-party FTP server or reconfiguring the <ProductName> to receive jobs via the third-party FTP server.	Player transmission client cannot start the integrated FTP server because the port is already in use, and the FTP server is started on the default port. Note there is a different problem (and problem wording) if the an attempt is made to start the integrated FTP server on a non-standard port.		
17	FTP port in use	The <ProductName> cannot receive jobs, because the internal FTP server could not be started. The most likely cause of this problem is that another server product is already using port <PortNumber>. Recommend reconfiguring the <ProductName> to use a different port.	Player transmission client cannot start the integrated FTP server because the port is already in use, and the FTP server is started on the default port. Note there is a different problem (and problem wording) if the an attempt is made to start the integrated FTP server on a non-standard port. Note that the only way to configure the Player transmission client to use a different port is via MMOS.ini variables, so only advanced users should ever see this problem.		
18	FTP server failed to start	The <ProductName> cannot receive jobs, because the internal FTP server could not be started.	Player transmission client cannot start the integrated FTP server.		
19	FTP server rejected command	The FTP server received an unexpected command. This could be a result of a coding error in the Scala Transmission Server Module, but possibly indicates that someone has discovered the <ProductName>s password, has connected to it with an FTP client, and is attempting to gain access to files and folders on the system.	Player transmission client receives an invalid FTP command. The consequence could be that an internal coding problem has resulted in an invalid command being sent, or it could indicate a security breach, the consequence of which the administrator must interpret.		

20	FTP server rejected password	An FTP client has been temporarily blocked, because the password was not accepted. This problem might occur if the FTP server's password has been changed recently, or if someone has manually entered the password incorrectly. It also might occur if the computer is not behind a firewall and an attempt is being made to break into a Scala Network.	The integrated FTP server blocks a client because the client has tried to connect multiple times using a password that was not accepted. This means someone or some software is trying to connect using a known Scala Network login name.		
21	FTP server rejected password again	An FTP client has been temporarily blocked, because the password was not accepted. This problem might occur if the FTP server's password has been changed recently, or if someone has manually entered the password incorrectly. It also might occur if the computer is not behind a firewall and an attempt is being made to break into a Scala Network.	The integrated FTP server blocks a client because the client has tried to connect multiple times using a password that was not accepted. This means someone or some software is trying to connect using a known Scala Network login name.		
22	FTP server rejected username	An FTP client has been temporarily blocked, because the username was not accepted. This problem might occur if someone has manually entered the username incorrectly, but in most cases it occurs if the computer is not behind a firewall and an attempt is being made to break into FTP servers on the network.	The integrated FTP server blocks a client because the client has tried to connect multiple times using a username that was not accepted. This means someone or some software is trying to connect using an unknown Scala Network login name (e.g., anonymous)		

23	FTP server rejected username again	An FTP client has been temporarily blocked, because the username was not accepted. This problem might occur if someone has manually entered the username incorrectly, but in most cases it occurs if the computer is not behind a firewall and an attempt is being made to break into FTP servers on the network.	the integrated FTP server blocks a client because the client has tried to connect multiple times using a username that was not accepted. This means someone or some software is trying to connect using an unknown Scala Network login name (e.g., anonymous)		
24	Too many errors	Some of the errors logged by this <ProductName> in the last 24 hours will not be viewable in the Scala Content Manager Health Monitoring view because a very large number of unique errors have been reported. This is unusual, and may indicate that an unexpected error condition has occurred. This should be reported to Scala Technical Support. 0etrieving the <ProductName> logs to view the remaining errors.	Player health subsystem has detected that more than N unique errors have occurred in a 24 hour period, and therefore some error messages were not reported.	Yes	Alert
25	Text not displayed	Some text elements in the script will not be displayed.	Fonts subsystem fails to install an embedded font.	Yes	Alert
26	Script failed to publish	Script "<ScriptName>" was not published.	Publish Automation EX Module logs that a specific script could not be published. The publish operation may continue with the next script on the list, if any.		
27	Scripts failed to publish	Scripts could not be published, because the publish operation encountered a fatal error.	Publish Automation EX Module reports if a fatal error prevents publishing of more than one script. This may include problems with the common target for a list of scripts.		

28	Script published with errors	Published script "<ScriptName>" will contain errors such as missing files. A user override switch instructs us to publish such scripts.	The Publish Automation EX Module logs that a specific script was published containing errors such as missing files.		
29	Publish Automation failed to start	Content-producing servers may not be able to publish to the Scala Network, because the Scala Publish Automation EX Module is not running. It may have failed to start or someone may have manually closed it. The process will not resume automatically, and some intervention, like a Reboot of the host computer, is needed to resume functionality.	Publish Automation EX Module logs it failed to start up.		
30	No Publish Automation tray icon yet	The Scala Publish Automation EX Module does not yet have a tray icon, because it is having trouble creating one. This problem is only a delay and will be reported again if it persists.	Publish Automation EX Module logs it is having trouble creating the tray icon.		
31	No Publish Automation tray icon	The Scala Publish Automation EX Module does not have a tray icon, because it failed to create one after repeated attempts.	Publish Automation EX Module application logs that it has given up creating the tray icon.		
32	Failed to resume download	An attempt to resume download of a file over <HTTP/FTP> has failed. This is not necessarily a critical problem as in many cases another attempt will be made to download the file. If this error occurs repeatedly it may indicate a problem that requires attention. For example, it may indicate unreliable network connectivity, which can result in files taking longer than expected to download.	The script file-transfer subsystem attempts to resume a file download, and fails. This subsystem does not know the purpose of the file being downloaded so this problem cannot describe all possible consequences, and the file may be downloaded again on a later attempt.		

33	Resume download succeeded	Resume download of a file over <HTTP/FTP> has succeeded. The original error is included in this problem report. The presence of this error is not necessarily a critical problem, however if this error occurs repeatedly it may indicate a problem that requires attention. For example, it may indicate unreliable network connectivity, which can result in files taking longer than expected to download.	The script file-transfer subsystem attempts to resume a file download, and succeeds. In this case the original error is logged for tracking, but generally is not a cause for concern.		
34	Failed to resume upload	An attempt to resume upload of a file over <HTTP/FTP> has failed. This is not necessarily a critical problem as in many cases another attempt will be made to download the file. If this error occurs repeatedly it may indicate a problem that requires attention. For example, it may indicate unreliable network connectivity, which can result in files taking longer than expected to upload.	The script file-transfer subsystem attempts to resume a file upload, and fails. This subsystem does not know the purpose of the file being uploaded so this problem cannot describe all possible consequences, and the file may be uploaded again on a later attempt.		
35	Resume upload succeeded	Resume upload of a file over <HTTP/FTP> has succeeded. The original error is included in this problem report. The presence of this error is not necessarily a critical problem, however if this error occurs repeatedly it may indicate a problem that requires attention. For example, it may indicate unreliable network connectivity, which can result in files taking longer than expected to upload.	The script file-transfer subsystem attempts to resume a file upload, and succeeds. In this case the original error is logged for tracking, but generally is not a cause for concern.		

36	Font not installed	The script will play incorrectly because a font required by the script is not installed.	The text drawing engine cannot open a font.	Yes	Alert
37	Dialing limits exceeded	Networking connectivity costs may be higher then expected because of excess dialup activity.	User configurable dialing limits have been exceeded.	Yes	Alert
38	Hardware problem	A significant hardware problem was detected.	A Hardware problem is detected.	Yes	Alert
39	Thumbnail not generated	A thumbnail was not generated.	Thumbnail generator feature of the Server Support module fails to make a thumbnail.		
40	Thumbnail has missing elements	A thumbnail was generated, but with some elements missing.	Thumbnail generator feature of the Server Support module makes a thumbnail, but some elements could not be drawn.		
41	Contents File format unknown	When downloading a script, an existing Contents File with an unknown or unsupported format was encountered. The existing file has been replaced. No action is required.	The script transfer subsystem finds an unknown format file where there should be an existing "contents file" (an XML file that describes the script layout and contents.)		
42	Playback report not uploaded (retrying)	A billing file for this <ProductName> was not properly prepared for transmission. Another attempt will be made at a later date. No action is required.	A single billing log is not properly prepared for upload (copied to temp directory and compressed), and that single file will not be uploaded. Processing of the rest of the files will continue.		
43	Playback reports not yet uploaded (retrying)	One or more billing file(s) for this <ProductName> will not be available because an error occurred while uploading the file(s). Another attempt will be made again later.	A recoverable error uploading the billing logs happens and we will retry the upload.		
44	Cleanup problem	When uploading billing files, an error occurred cleaning up old files. The cleanup will be completed at a later time. No action is required.	There is a problem cleaning up old temp files, but the upload of the billing logs will not be impacted (processing will continue.)		

45	Playback reports cannot be uploaded	One or more billing file(s) for this <ProductName> will not be available because an error occurred while uploading the file(s).	A non-recoverable error happened while uploading the billing logs, and as a result, processing will stop.	Yes	Alert
46	IP Multicast receive error	IP Multicast data cannot be received because an error occurred while initializing the network stack. The driver will retry again automatically but if this problem persists rebooting the player may correct the problem.	IP multicast pipe cannot receive broadcasts.		
47	Placeholder problem	No description provided, place holder text.	Internal use during Scala software development, and normally does not occur in the actual product.		
48	No Transmission Server tray icon yet	The Transmission Server does not yet have a tray icon, because it is having trouble creating one. This problem is only a delay and will be reported again if it persists	Transmission server is having trouble creating the tray icon.		
49	No Transmission Server tray icon	The Transmission Server does not have a tray icon, because it failed to create one after repeated attempts.	Transmission server gives up creating the tray icon.		
50	Player not currently running	Information only: The <ProductName> was not playing at the time of processing a new plan, as the Playback Module could not be contacted. There are windows of time during startup and shutdown when this can happen normally, in which case playback will resume shortly, and no action is required. This alone is therefore not considered alarming. Expect a separate alarmable problem around this time if the problem requires manual action.	Player graphical engine fails to start up.		

51	Cannot receive plans	The Scala Player Transmission Client cannot receive new plans, because the folder does not exist.	Player network engine cannot receive plans because the folder does not exist		
52	Cannot download plans	The Scala Player Transmission Client may not have the latest plan, because it is having trouble downloading it. This problem is only a delay and will be reported again if it persists.	Player network engine cannot receive plans because the folder does not exist.		
53	Plan unreadable	The Scala Player Transmission Client may not have the latest plan, because the plan file is corrupt or incomplete. This problem is not necessarily serious, and may resolve itself on a future retry.	Player network engine cannot receive plans because the folder does not exist.	Yes	Alert
54	Cannot upload plan status	The player network cannot return plan status, because it is having trouble uploading it. This problem is not necessarily serious, and may resolve itself on a future retry, however it can result in incorrect or out dated status information on the server.	Player network engine cannot return plan status.		
55	Failed to remove preloaded content	The player network cannot remove unneeded preloaded content, because it is having trouble deleting it. This problem is not necessarily serious, however it can result in wasted CPU time in the future as the unneeded content may be checked again.	Player network engine cannot remove obsolete preinstalled content.		
56	Maintenance job failed	The player network failed to execute a maintenance job, because of an error. No future attempts will be made.	Player network engine reports when a maintenance job fails.	Yes	Alert

57	Maintenance job failed (retrying)	The player network failed an attempt to execute a maintenance job, because of an error. The job will be retried and may succeed on a future attempt.	Player network engine reports when a maintenance job fails, but will be retried.		
58	Maintenance job waiting for files	The player network failed to execute a maintenance job, because some files required for installation are not available yet. A future attempt will be made at the next scheduled execution time.	Player network engine reports when a maintenance job fails because some required files are missing.		
59	Transmission Server missing files	The transmission server failed to broadcast a file, because the file is not available. This may indicate a problem with the source file server or the file may have been replaced by a newer revision.	Network transmission engine cannot broadcast a file because the file does not exist on the file server.		
60	Transmission Server broadcast failed	The transmission server failed to prepare the a broadcast, because an unexpected error occurred. This problem can result in players not receiving needed files or plans.	Network transmission engine fails to build a broadcast package.		
61	Transmission server message failure	The transmission server failed to process a message, because an unexpected error occurred. This problem may automatically resolve itself on a retry, however it indicates an unexpected condition that should be investigated by technical support.	Network transmission engine fails to process a received message.		
62	Player Invalid license	The <ProductName> is not playing content, because the Playback Module does not have a valid license.	Player engine cannot play scripts because it does not have a valid license.	Yes	Alert

63	Failed cleaning up health logs	When uploading health logs, an error occurred cleaning up old files. The cleanup will be completed at a later time. No action is required.	There is a problem cleaning up old temporary files, but the upload of the Health logs will not be impacted (processing will continue.)		
64	Health logs cannot be uploaded	One or more health log(s) for this <ProductName> will not be available because an error occurred while uploading the file(s).	A non-recoverable error happened while uploading the health logs. Processing of health logs will stop.	Yes	Alert
65	Health logs not uploaded (retrying)	One or more health log(s) for this <ProductName> will not be available because an error occurred while uploading the file(s). Another attempt will be made again later.	A recoverable error uploading the Health logs happens, and the upload will be retried.		
66	Heartbeat not delivered	Heartbeat could not be delivered.	Player health subsystem discovers it can not deliver the heartbeat to the server. It is NOT alertable, as it is not recommended to cause another heartbeat when a heartbeat can not be delivered.		
67	Failed to register Scala Maintenance	The Scala Player Transmission Client failed while trying to register the Scala Maintenance expiration date. This is not a serious problem, however it may may result in some incorrect prompts when attempting to install a service pack on this player. The most likely cause of this problem is the Scala Network Transmission Client is not running under an administrator account.	Player network engine cannot register a license.		
68	Configuration problem	Configuration Problem. Software is not functioning properly. Please check your configuration and/or contact Scala Technical Support.	A configuration problem not covered by a more specific problem.		

69	Product not authorized	Product authorization failed, because the product hardware key is not installed or was not detected. This problem will result in a product not operating. Check that hardware key is plugged in, and that the key driver has been installed.	An error occurred while authorizing a product.		
70	Product license invalid	Product authorization failed because the product license is not valid. This problem will result in a product not operating. Check that a valid license file has been purchased and installed correctly.	An error occurred while authorizing a product.		
71	Transmission Server broadcast send failed	The transmission server failed to send a broadcast package or envelope to a broadcast server. This problem can result in players not receiving needed files or plans.	Network transmission engine fails to push a broadcast package or envelope to a broadcast server.		
72	Download failed	Download of file failed. This problem may correct itself on a future attempt.	File download failure. The file transfer engine normally retries when appropriate.		
73	Upload failed	Upload of file failed. This problem may correct itself on a future attempt.	File upload failure. The file transfer engine normally retries when appropriate.		
74	Problem reading transitions	Some scripts may play incorrectly because of errors reading the transition definitions.	Problem when reading the transition-definition files.	Yes	Alert
75	Render monitor problem	The Render Monitor will not work correctly because of an error.	Render Monitor fails.		
76	Server Support service not running	Thumbnails for media and messages may not be updated, because the Scala Server Support module failed to start.	Some intervention, such as a reboot of the host computer, may be needed to resume functionality. This problem is reported when the Server Support module of Content Manager fails to start up.		

77	No Server Support tray icon yet	The Scala Server Support engine does not yet have a tray icon, because it is having trouble creating one. This problem is only a delay and will be reported again if it persists.	The Server Support service is having trouble creating the tray icon.		
78	No Server Support tray icon	The Scala Server Support engine does not have a tray icon, because it failed to create one after repeated attempts.	The Server Support service gives up creating the tray icon.		
79	No players defined	It appears that there are no players defined for this network. You must create and configure players in Scala Content Manager before refreshing the player list in <ProductName>.	If the redirect.xml file is not found, then there are no players defined in the Content Manager.		
80	Player Config Invalid license	The Playback Configuration Module cannot determine playback options, because the Playback Module does not have a valid license.	Player configuration engine cannot determine playback capabilities because the player has an invalid license.		
81	Broadcast failed	Broadcast failed. Player plans and content files embedded in the broadcast may not have be received.	A broadcast failed.		
82	Broadcast send envelope failed	Broadcast send envelope failed. Player plans and content files embedded in the broadcast will not have be received. This problem may resolve itself on a future attempt, but until resolved the broadcast data cannot be transmitted.	Broadcast send envelope failed (applies to package drivers only).		

83	Broadcast confirmation failed	Broadcast confirmation failed. Player plans and content files embedded in the broadcast may not have be received. This problem may resolve itself on a future attempt, but until resolved the broadcast reception state of the players cannot be determined.	Broadcast confirmation failed.		
84	Broadcast Server plan download failed	The Scala Broadcast Server may not have the latest plan, because it is having trouble downloading it. This problem is only a delay and will be reported again if it persists.	Broadcast server cannot receive plans because the folder does not exist or a connection issue occurs.		
85	Broadcast Server plan status upload failed	The Broadcast Server cannot return plan status, because it is having trouble uploading it. This problem is not necessarily serious, and may resolve itself on a future retry, however it can result in incorrect or out dated status information on the server.	Broadcast server cannot return plan status.		
86	Broadcast Server failed to abort	The Broadcast Server cannot abort orphaned broadcast. This problem is not necessarily serious, and may resolve itself on a future retry, however it can result in active broadcasts being delayed.	Broadcast server cannot abort orphaned broadcasts.		
87	No Broadcast Servers defined	It appears that there are no broadcast servers defined for this network. You must create and configure broadcast servers in Scala Content Manager before refreshing the broadcast server list in <ProductName>.	If the broadcast-redirect.xml file is not found, then there are no broadcast servers defined at the Content Manager.		

88	Logging failed (disk space below reserve)	Player could not write log entries to IC.log because the remaining free space on the partition is below the disk space reserve level. Remove files to increase the free space on the disk.	Player detected that it is running out of disk space, so it will not log entries until more space is freed.	Yes	Alert
89	Media download failed (disk space below reserve)	Player is not playing the current plan because there is insufficient disk space available to download required media (the remaining free space on the partition is below the reserve level.) Remove files to increase the free space on the disk so that media may be downloaded.	Player will not store newly downloaded media because there is not enough free disk space. The content playing will be out of date.	Yes	Alert
90	Playback audit logging failed (disk space below reserve)	Player could not write log entries to the Playback Audit Log because the remaining free space on the partition is below the disk space reserve level. Remove files to increase the free space on the disk.	Player detected that it is running out of disk space, so it will not playback audit log entries until more space is freed.	Yes	Alert
91	Transmission Client detected UAC	Some features, including Install System File and Install Software Update, will not work because Windows User Account Control (UAC) is enabled. UAC is not suitable for a remotely managed Player.	Windows User Account Control (UAC) should be disabled on Player PCs because there is no user present. If it is enabled, remote software updates will fail because there is no user to ask permission from. Player would have to be updated by an operator using a conventional installer, instead of via the remote maintenance capability of Content Manager and Player.	Yes	Alert
92	Screen problem during playback	Playback is active but some media items may not have displayed due to issues with the screen.	An issue with the screen is preventing a media item from being displayed.	Yes	Alert

93	Player failed to finish media item (watchdog)	Watchdog detected that Player failed to complete playing the current media item when expected, and may need to be rebooted. Please contact Technical Support if this problem persists.	The watchdog detected that Player failed to complete playing the current media item when expected, and may need to be rebooted.	Yes	Alert
94	Cannot embed font	The published ScalaScript contains a font that cannot be embedded. To successfully distribute this script, ensure that the target machines already have the necessary font(s) installed.	The ScalaScript contains a font that cannot be embedded. Please make sure that the target machines have the necessary font(s) installed.		
95	Media file missing, download failed	A media item is missing at the source and could not be downloaded. This might be the item itself or a ScalaScript missing a referenced file. Re-uploading the file or re-publishing the ScalaScript is suggested.	A media item is missing from the source and could not be downloaded. This problem may be solved by re-uploading the file or publishing the ScalaScript.	Yes	Alert
96	Media item did not play	Media item <itemname> did not play.	A media item did not play.	Yes	Alert

External Problem Codes

Many Player solutions are achieved by integrating with other devices or services, using Windows Scripting (Python, VBScript, etc.), or external applications that interact via COM. These integrations can report problems via the Scala problem reporting system.

The following problem codes are defined for problems or warnings of various types. The custom integration can supply its <ModuleName> and a <custom message> to display in the logs and in Content Manager's Player Health screens.

Code	Error Text	Consequence	Explanation	Alarmable?	Alert or Warning?
1000	External problem	The module "<ModuleName>" reported a problem: "<custom message>".	Error noted by the custom integration software not better described by a more specific code.	Yes	Alert
1001	External warning	The module "<ModuleName>" reported a warning: "<custom message>".	Warning noted by the custom integration software not better described by a more specific code.		
1002	External hardware problem	The module "<ModuleName>" reported a problem with the Player hardware: "<custom message>".	Error related to the Player hardware monitored or managed by the custom integration software.	Yes	Alert

1003:	External hardware warning	The module "<ModuleName>" reported a warning with the Player hardware: "<custom message>".	Warning related to the Player hardware monitored or managed by the custom integration software.		
1004	External display problem	The module "<ModuleName>" reported a problem with the Display or Screen: "<custom message>".	Error related to the display or screen monitored or managed by the custom integration software.	Yes	Alert
1005	External display warning	The module "<ModuleName>" reported a warning with the Display or Screen: "<custom message>".	Warning related to the display or screen monitored or managed by the custom integration software.		
1006	External device problem	The module "<ModuleName>" reported a Device problem: "<custom message>".	Error related to a device used or managed by the custom integration software.	Yes	Alert
1007	External device warning	The module "<ModuleName>" reported a Device warning: "<custom message>".	Warning related to a device used or managed by the custom integration software.		
1008	External communication problem	The module "<ModuleName>" reported a Communications problem: "<custom message>".	Error related to communication (e.g. network connection) used by the custom integration software.	Yes	Alert
1009	External communication warning	The module "<ModuleName>" reported a Communications warning: "<custom message>".	Warning related to communication (e.g. network connection) used by the custom integration software.		
1010	External software problem	The module "<ModuleName>" reported a Software problem: "<custom message>".	Error related to the custom integration software itself.	Yes	Alert
1011	External software warning	The module "<ModuleName>" reported a Software warning: "<custom message>".	Warning related to the custom integration software itself.		
1012	External data problem	The module "<ModuleName>" reported a Data problem: "<custom message>".	Error related to the data used by the custom integration.	Yes	Alert
1013	External data warning	The module "<ModuleName>" reported a Data warning: "<custom message>".	Warning related to the data used by the custom integration.		

Codes for Individual Players

To find the meaning of the Problem Code for your individual Player, follow the link below for your specific Player. choose it from the list below and click on the link.

- Android Players
- IAdea Android Players
- Samsung SSP Players
- Scala Enterprise Player for Chrome

Using Playback Auditing

The user can generate Playback Audit reports using Content Manager. There are several types of Reports that the system supports:

- Media Item reports (pdf/html)
- Player reports (pdf/html)

The user may choose the level of detail and specify the selection criteria for these reports.

Prior to using the reporting module, the Playback Audit Module needs to be installed and configured, if it was not done at the time of initial installation.

> ⚠ **Caution:**
> When installing the Playback Audit Module (PAM) for the first time on an existing system, care should be taken to prevent Content Manager from becoming overwhelmed with the quantity of historic "Billing" files that are waiting to be processed, as they are never deleted from your Content Manager. Moving the Billing files to an alternative location prior to installation is recommended, as it will free up HDD space over time, depending on the size of your network.

The purpose of the PAM is to give you a way of gathering information on your assets, and the frequency with which they are utilized. This information will be stored in Log Files that will be stored in the following directory, unless you move it somewhere else on your machine because of a space concern: (the default directory is
C:\ProgramData\Scala\InfoChannel Content Manager 5\Data\<NETWORK_NAME>\receive\billing\<PLAYER_UID>).

The frequency with which these logs will be gathered is explained in more detail in the Managing the Point to Point Server section, which covers the Playback Audit Settings in **Network > Distribution > Properties**. These can be set to hourly or nightly, but it is recommended that these logs be run on a nightly basis, as doing so hourly will fill your disk space more quickly. Routine checks also scan for and prevent duplicates. Once the logs are gathered, they are processed, and the data is stored in the MongoDB database.

After the log information is collected it is parsed or converted into the reporting format you have set up. After that, it is sent to an archive. The default location for this directory is: C:\ProgramData\Scala\InfoChannel Content Manager 5\Data\ <NETWORK_NAME> \receive\billing_archive\<PLAYER_UID>. If you data for this archive, it will be scanned and parsed. If it has never been processed before, it will then be stored in MongoDB.

Additional Topics

For more information on topics relating to Playback Audit Reporting, please see:

- Installing Playback Audit Module for the First Time
- Configuring Playback Audit Reporting
- Managing Reports

Installing Playback Audit Module for the First Time

> ⓘ **Note:**
> When installing the Reporting Module (Playback Audit Module) for the first time on an existing system, care should be taken to prevent Content Manager from becoming overwhelmed with the quantity of historic "Billing" files that are waiting to be processed. Moving the Billing files to an alternative location prior to installation is recommended. Information on the location of the file can be found in the Using Playback Auditing section.
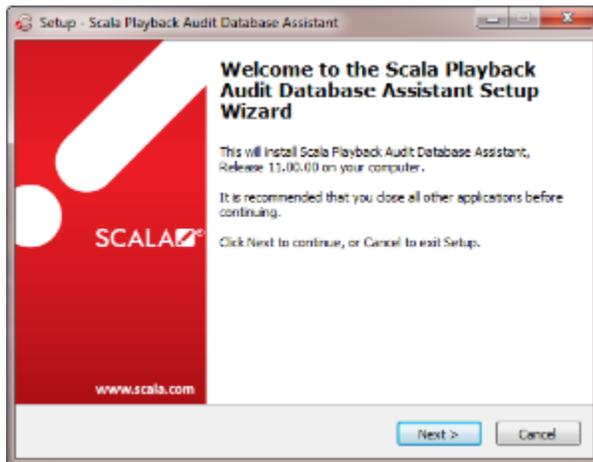
Installation Steps

> ⓘ **Note:**
> If you are migrating an old database, please see Migrating Playback Audit Data from a Pre 11.00 Release. For the purposes of this document, we will choose BOTH options in Step 3. You are not required to do so. As a result, what you see below may vary slightly. It is assumed you are creating a new database and do NOT have MongoDB installed.

1. Select a Product to Install

If you are using your machine's hard drive, navigate to the Scala directory, and find the file labeled pamassistant.exe. On the screen that appears when you select the Installer, choose **Playback Audit Database Assistant**. Click **Next** to continue.

2. Setup Wizard

The Setup Wizard will guide you through the Installation Process. When you are ready to proceed, click **Next** to continue.

3. Database Assistant

Choose the Install MongoDB option listed on this page, and click **Next** to continue.

4. License Agreement

This is the End User License Agreement for MongoDB. Choose "I accept this license agreement," and click **Next** to continue.

5. Destination Location

Choose where the MongoDB application will be installed. You can either use the default location (as seen below), or change to a different location. Once you have made your selection, click **Next** to continue.
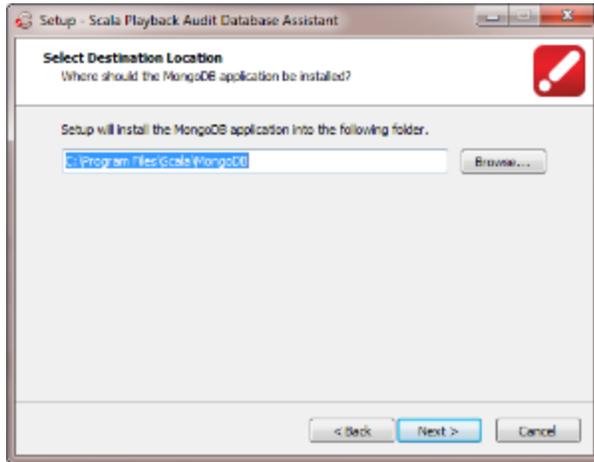
## 6. Download MongoDB Distribution File

The MongoDB distribution file is required by the installer. If you already have downloaded it, find the file on your computer and select it.

If you need to download it, click on the box that says **Visit MongoDB Download Site**. This will take you to a page where you can download the software to your machine.

> ⓘ **Note:**
> As of Version 11.02, Scala Enterprise requires MongoDB version 3.0.12 or newer.
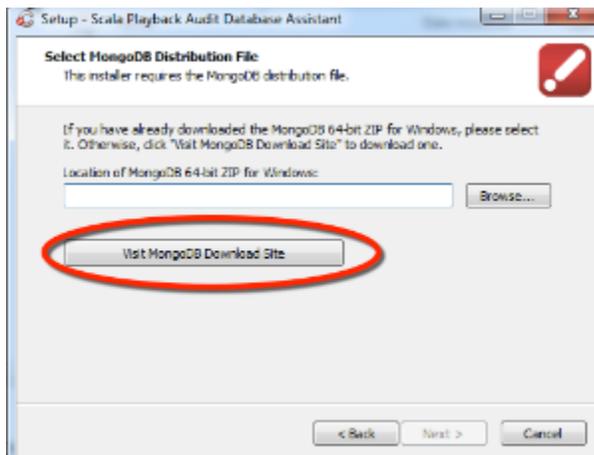
7. Database File Storage Location

Choose where the MongoDB database files will be stored. You can either use the default location (as seen below), or change to a different location. A warning will appear telling you that each player will consume about 10MB of disk space, and the location you selected has only about x GB free on your machine for the logs, so please change the destination folder if necessary. Once you have made your selection, click **Next** to continue.
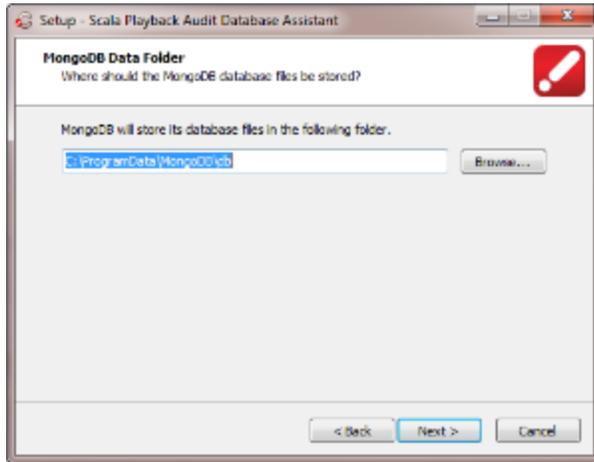
8. Initializing Your Connection

On this screen is where you create your database connection by setting your connection and access/security parameters. Your database port will be set to port 27017 by default, but this setting can be changed.

In the list of restrictions, check the box next to **Access from localhost only** and click **Next** to continue.

9. Anonymous Access Warning

If you choose to not check the box requiring a username and password, the following will appear as a warning.
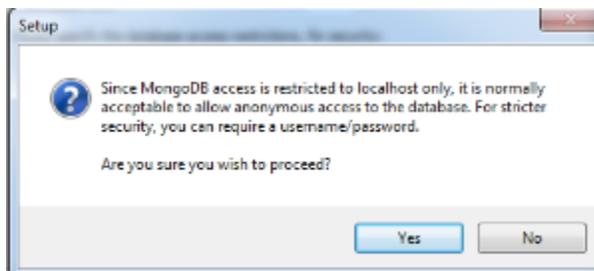
If you still wish to proceed click **Yes**. If you click **No**, you will be taken back to the previous step where you can enable username and password access as required.

10. Database Name Screen

On the screen, enter the name of your database. Once you have done so, please click **Next** to continue.

11. Ready To Install

A screen will appear summarizing all the choices you have made throughout the installation process. Once you confirm them, click **Start** to

continue. You will then see a warning telling you that depending on the size of your database, migration will take up to a few hours. The system will provide an estimate, which will adjust itself during the install process.

12. Install Complete
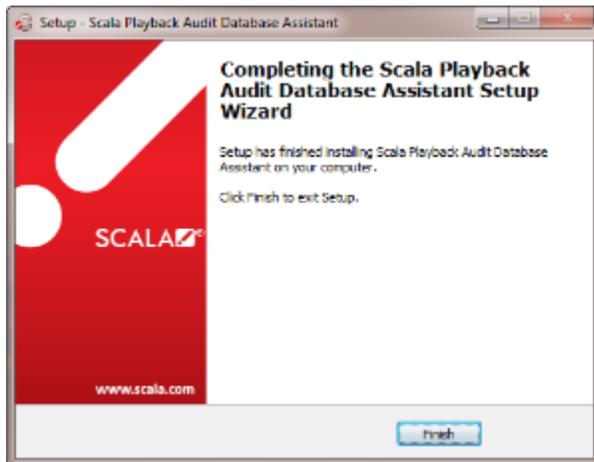
Once you are done with the installation process, you will see the above box. Your Playback Audit Database is now available to use.

Migrating Playback Audit Data from a Pre 11.00 Release

Supported Connection String Options

The following are the only connection string options supported by the PAM parser. The reports module connects to the MongoDB differently so it supports a different set of options:

- **connectTimeoutMS:** Time in milliseconds to attempt a connection before timing out. The default is never to timeout, though different drivers might vary.
- **socketTimeoutMS:** Time in milliseconds to attempt a send or receive on a socket before the attempt times out. The default is never to timeout, though different drivers might vary.
- **maxIdleTimeMS:** Maximum number of milliseconds a connection can remain idle in the pool before being removed and closed.

Migration Steps

> ⓘ   **Note:**
> This process assumes that you had Playback Audit Parser installed in the version of Content Manager you are upgrading from, and you have just completed an upgrade from one of those listed under the Supported Upgrade Path, which included installing MongoDB.

1. Before Migration

To move to the new version of Playback Audit Module, you will need to upgrade your version of Content Manager to version 11.00.00 or newer, ensuring first, that 3rd party components are also upgraded to the correct versions.

As part of this update process, you will be given the given the option to remove the old version of Playback Audit Parser from your system (which it is recommended that you SHOULD do), but WILL NOT remove your Playback Audit data, which will be migrated through the following process.

2. Run the Playback Audit Database Assistant (Migration Tool)

If you are using your machine's hard drive, navigate to the Scala directory, and find the file labeled pamassistant.exe. On the screen that appears when you select the Installer, choose **Playback Audit Database Assistant**. Click **Next** to continue.
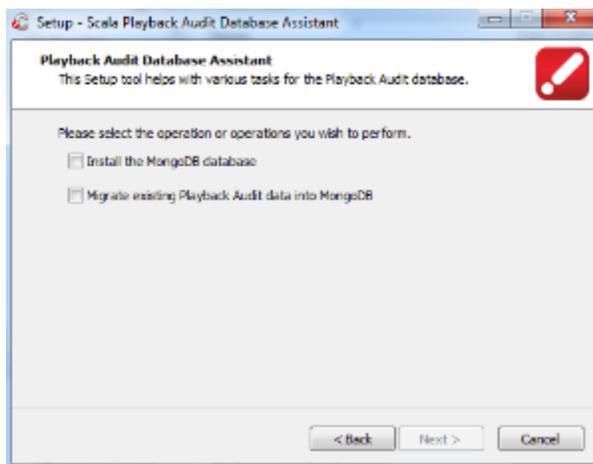
3. Setup Wizard

The Setup Wizard will guide you through the Installation Process. When you are ready to proceed, click **Next** to continue.

4. Database Assistant

Choose both options, and click **Next** to continue.
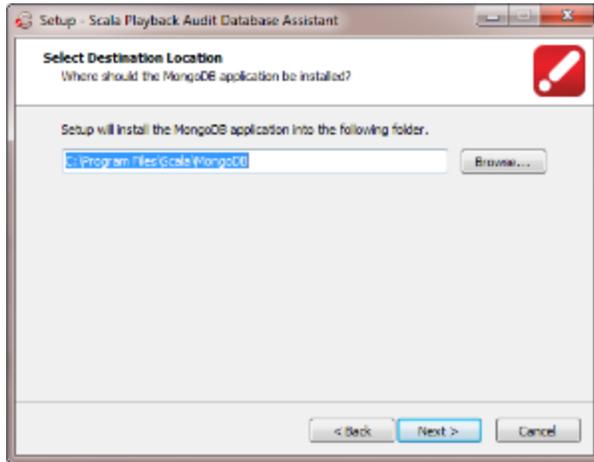

⚠ **A Word of Caution:**
Depending on the size of your database, the migration of your existing Playback Audit data to MongoDB may take hours or longer. Please be aware of this when doing the migration, as new billing files will NOT be scanned for during this process.

5. License Agreement

This is the End User License Agreement for MongoDB. Choose "I accept this license agreement," and click **Next** to continue.

6. Destination Location

Choose where the MongoDB application will be installed. You can either use the default location (as seen below), or change to a different location. Once you have made your selection, click **Next** to continue.

7. Database File Storage Location

Choose where the MongoDB database files will be stored. You can either use the default location (as seen below), or change to a different location. A warning will appear telling you that each player will consume about 10MB of disk space, and the location you selected has only about x GB free on your machine for the logs, so please change the destination folder if necessary. Once you have made your selection, click **Next** to continue.
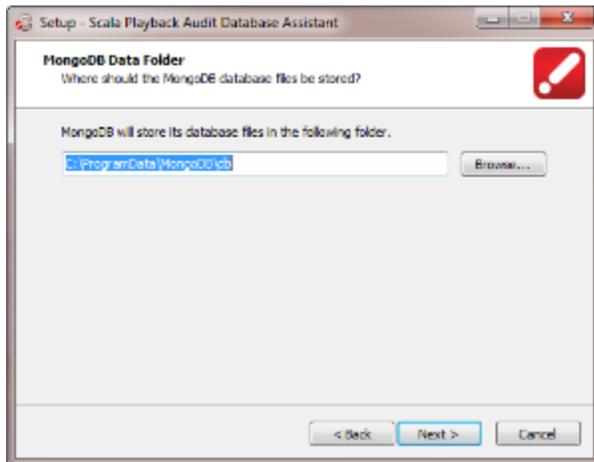
8. Database Migration

On this screen, enter the information for your existing PAM database (either PostgreSQL or Microsoft SQL Server), including the database host, port and schema. You will need to include the username and password information you created when initially setting up your Content Manager. Once you have entered this information, click **Next** to continue. Your information will then be validated. If it is correct, you will proceed to the next step.
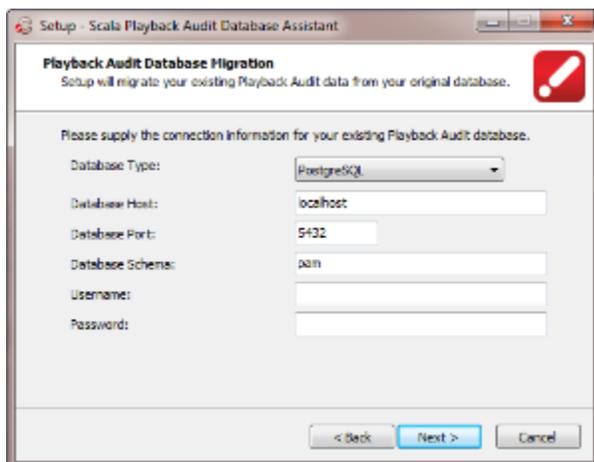
9. MongoDB Installation

You will need to enter the information for the new MongoDB database here. You will need to enter the database host, port and name.

You can choose from one of the following User Types: Anonymous, Existing or New DB User.

> ⓘ **Note:**
> It is recommended that you use the NewDB User option, as it is more secure. Selecting Anonymous will bring up a box that will tell you that choosing this option is not recommended. If you do so, and wish to proceed anyway, please click **Yes**.

You will need to enter a new username and password, which you will need to verify by retyping. This password must be at least eight characters. Once you have done this, click **Next** to continue.

10. Ready To Install

A screen will appear summarizing all the choices you have made throughout the installation process. Once you confirm them, click **Start** to continue. You will then see a warning telling you that depending on the size of your database, migration will take up to a few hours. The system will provide an estimate, which will adjust itself during the install process.

11. Install Complete
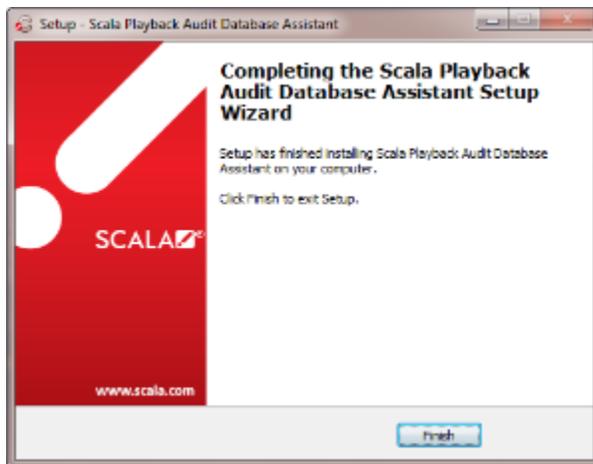
Once you are done with the installation process, you will see the above box. Your Playback Audit Database is now available to use. Configuring Playback Audit Reporting will guide you through the next step, configuration, which must be completed before the module will properly work.

Configuring Playback Audit Reporting

> ⚠ **Warning:**
> Scala does not support the modification of its database schema (which by default is pam). Doing this will lead to negative consequences when patching the database.

Enabling Playback Audit Reporting

To use Playback Audit Reporting, it must first be enabled. This can be done by:

1. Go to the **System** menu, choose **Administration** and then select **Network Settings**.
2. Under **Network Settings**, choose the **Miscellaneous Settings** tab, and choose the **Yes** option for **Enable Playback Audit Reporting**. Please be sure that the permissions of you and any user who will be utilizing this function are set up so you are able to view and edit these reports and their settings, as well as create and delete reports.
3. Refresh the browser screen containing your Content Manager, and another menu called Reporting should appear at the top of the page, as seen below.
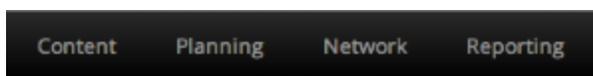

Reporting Database Configuration

In the **Reporting** menu, click on **Database Configuration**.

Fill in the form with the appropriate details:

- **Hostname**: Name of the host for your database.
- **Port**: Port your database is listening to.
- **Schema**: Structure of your database.
- **Username**: Username for the reporting database.
- **Change Password**: Clicking this option will force you to change your password.
- **Password**: Enter a new password, and confirm it in the box below.

If accessing the database from localhost, a username and password are not required. Otherwise, you will need to enter credentials required to access the database, either via the Content Manager Installer, or a MongoDB config file. If you make any changes to that config file, restart the MongoDB and Apache Tomcat services to avoid a memory leak issue.
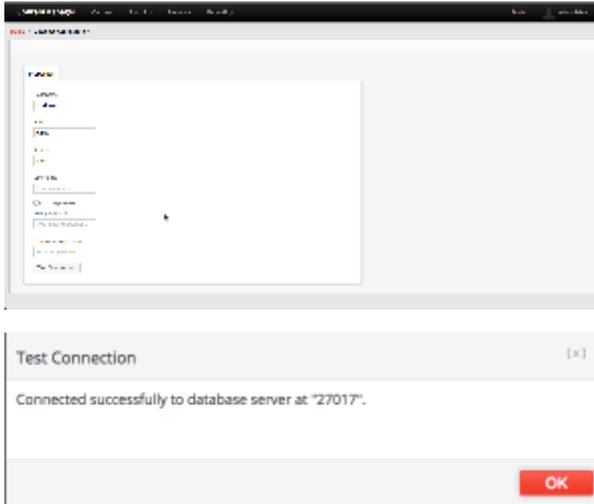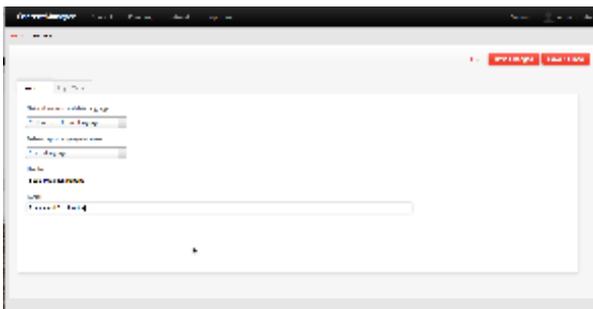

Once you have your changes to this screen, click either **Save Changes**, or **Save and Close** to commit those changes.

Adjusting Your Settings

In the **Reporting** menu, clicking on **Settings** allows you to make changes to the general Report settings for the following parameters:

- Properties:
    - **Network content and data language**: Defaults to Follow User's Report Language, but can be set to any of those supported by Content Manager.
    - **Default report language for users**: Defaults to User's Language, but can be set to any of those supported by Content Manager.
    - **Header**: None is necessary, but one can be added to the report.
    - **Footer**: None is necessary, but one can be added to the report.

The **Logo Media** tab allows you to add or remove a logo for your reports, and set an alignment (either left, right or center) for where that logo should be on the report itself.
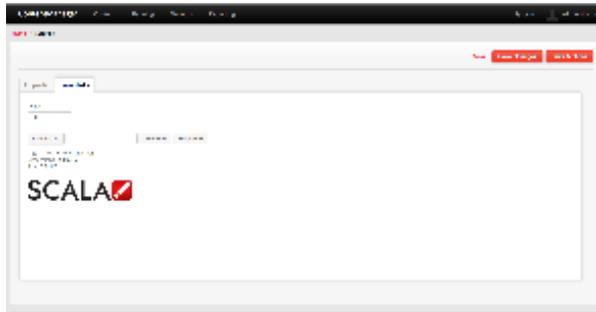
Once you have your changes to this screen, click either **Save Changes**, or **Save and Close** to commit those changes.

Configuring Your Database

In the **Reporting** menu, clicking on **Database Configuration** allows you to make changes to the following parameters:

- Properties:
    - **Hostname**: Name of the host for your database
    - **Port**: Port your database is listening to
    - **Schema:** Structure of your database
    - **Username:** Username for Content Manager
    - **Change Password:** Clicking this option will force you to change your password
    - **Password:** Enter a new password, and confirm it in the box below.
    - **Test Connection**: Not a parameter, but clicking on the Test Connection button will allow you to test your connection to the host for the database.

Managing Reports

Creating Reports

Clicking on the **Reports** menu under **Reporting** will give you a screen that lists all reports you have set up for your Content Manager.

To create a new report:

1. Click **+ New** on the screen.
2. In the screen that appears, fill in the parameters to suit your needs.
    a. **Report Name:** Give your report a name. If you make no change, it will be Report (YYYY-MM-DD 24:00:00 GM-YOUR TIME ZONE)
    b. **Start Date:** Date the you want the report to start. The default is a week before the last full day before you create the report.
    c. **End Date**: Date the you want the report to end. The default is the last full day before you create the report.
    d. **Report Type**: Defaults to Media Summary, but can also be set to:
        i. **Media Summary**: List of media items on a Player. The report will list the media items on each Player, the Channel that played them, how many times they were played and for how long.
        ii. **Media Detailed**: List of media items on a Player. For each media item, the report will give a playout summary and list of playouts grouped by Channel it was played on. The summary consists of the number of Players the media item was played on, the total number of times it was played, and the total time it was played. The list of playouts consists of the number of times it was played and for how long on each Channel.
        iii. **Player Summary**: List of Players you currently have using Content Manager. The report will list the number of media items on each Player, the Channel they were played on, how many times they have been played and for how long.
        iv. **Player Detailed:** List of Players you currently have using Content Manager. The report will list the media items on each Player grouped by the Channel that played them. For each media item, the number of times it was played and for how long is listed will be in the report.
    e. **Report Language**: Defaults to the language you are using, but can be set to any of the languages supported by Content Manager.
    f. **Include ScalaScript events**: Allows the parser to include billing events that exist within a ScalaScript. Can be set to either Yes or No.
3. After you have set your parameters, click **Next**.

> ⓘ **Note:**
> If you wish to skip any of the parameters, click **Skip** at the bottom of the screen. If you need to go back to a different screen and make changes, click **Previous**.

4. Choose the Channels and Frames you want the report to cover, and click **Next.**
5. Choose the Players you want covered in the report. If you select the default filter for Criteria, you can choose the Player Groups and/or Player Metadata you want. When you have finished, click **Next.**
    a. If you choose to filter on Manual Selection, click Add Player to select the Player(s) you want in the report. Click **Add** to add a Player, or **Add & Close** to add a Player and exit the screen.

6. Choose the Media Items you want covered in the report. If you select the default filter for Criteria, you can choose these criteria by your Workgroups (either Owner or View), Media Category or Media Metadata. After you have set your parameters, click **Generate**.
   a. If you choose to filter on Manual Selection, click Add Media Item to select the Media Item(s) you want in the report. Click **Add** to add an Item, or **Add & Close** to add an Item and exit the screen. After you have added all the Media Item you want in the report, click on **Generate**.

The report criteria selected in steps 4 through 6 above/below are joined using the logical AND operator. Any criteria selected within each step is joined using the logical OR operator. For example, ((Channel 1 OR Channel 2) AND (Player 1 OR Player 2) AND (Media Item 1 OR Media Item 2)).

The report generated can then be viewed either as a PDF or HMTL page. Page 1 of the report shows the criteria that generated the report, and subsequent pages show the remainder.

Creating a Report from an Existing One

To create a report from one that already exists:

1. Select the report you want to duplicate, and click **New From Existing.**
2. Make any changes to report that are necessary, and click Next on each of the screens that follow. When you have finished and reach the final screen, click **Generate**.
3. Repeat as needed if you need to do this for more than one report, as the selection of multiple reports is currently not supported.

Deleting a Report

To delete a report:

1. Select the report(s) you want to remove, and click **Delete.**
2. Confirm that you wish to delete the selected report(s) by clicking **Proceed.**

Using a Reports as for Specific Purposes

If you are using the report you created for a specific purposes, such as tracking specific when a specific media item(s) plays, using the Manual Selection option would be beneficial, as doing so allows you to use these reports as billing logs, or something similar, if necessary. The frequency with which these reports can be run is configured by clicking **Distribution** in the Network menu, selecting a server, and clicking **Properties**. The Playback audit upload frequency can be set to either Nightly or Hourly. This changes how often players upload playout log files to Content Manager. These playout log files are then parsed and saved into the reporting database. Reports will need to be re-run to include any new playout data.

If a database related error occurs when writing to the database, it will be marked as unseen and remain in the billing folder. It will remain there until the next time the folder is polled, and the billing log will be available for another attempt at parsing.

Using the Web Services API's, advanced users are able to pull playback audit data back into their own systems, for further processing, or highly customized reports. This allows integrations for business analytics, and custom reporting. Individual playback times (not just aggregated information) are available through web services.

Understanding the Dashboard

This Dashboard allows you to generate a new report or view a previously generated one.
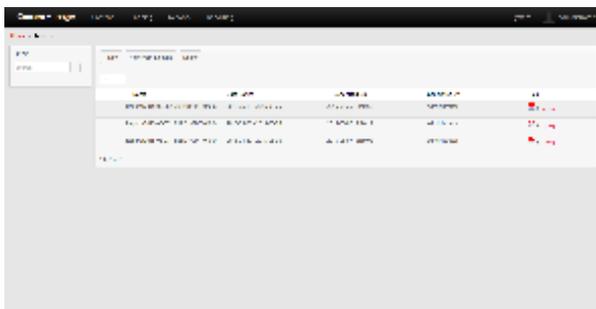
There are icons on the Dashboard that will help you more easily manage your Reports. The charts below offer a quick guide to the icons and what they mean.

Icon	Seen When	Where
	PDF file gets generated	Reports landing page
	File is not generated	Reports landing page

Interfacing via the API

An Application Program Interface (API) is a set of routines, protocols and tools for building software applications to complete a specialized portion of the workflow. For example, let's say you have a pricing list that must be updated in 300 stores around the world simultaneously. This can be done by using an API.

Content Manager allows for the use of these custom applications as a means of allowing you to contribute information, adjust workflow or monitor systems more efficiently. They are effective when automating repetitive, time consuming and error prone workflows, such as the store example we previously discussed.

There is no specific programming language that APIs must be written in, but they must be able to work with the UI.

Content Manager uses a full set of RESTful Web Service APIs that are supported by Scala.

A sample of the API documentation for Content Manager can be found here. The full version can be found by clicking on **System** in upper right hand corner of your Content Manager**,** then selecting **Documentation,** choose **View API Documentation**.

Sample of API Documentation

The examples found on this page represent a sampling of the common API calls in Content Manager. If you would like to look at the full list of API's, please click on **System** in upper right hand corner of your Content Manager**,** and in the left hand column, under **Documentation,** choose **V iew API Documentation.**

Authentication

> ⓘ **A Note about Authentication APIs:**
> The Authentication.Login api is used to log into the Content Manager. The response to this API call contains the 'apitoken' and 'token' data fields. All other requests to the CM must contain these two tokens or the response will be '401 Unauthorized.'

Login to Content Manager

Service Name	API Call	Call Type	Call Description
Login to Content Manager	/api/rest/auth/login	POST	Login to Content Manager.
Logout of Content Manager	/api/rest/auth/logout	GET	Logout of Content Manager.

Third party applications cause an issue with a buildup of security tokens that can be removed by logging out of the user session, or having it time out.
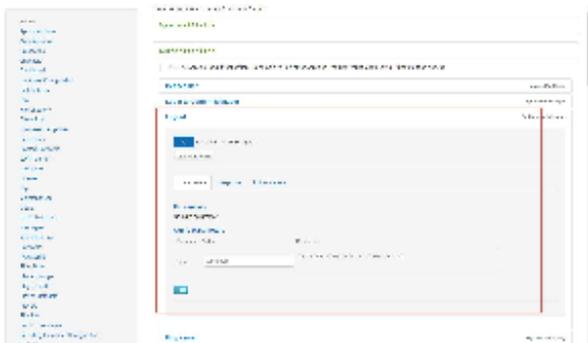
Below are screenshots of this API detailed information. Information for any of the other API calls in Content manager should similar to this one. Click on the image to see a larger version.

Parameters Tab
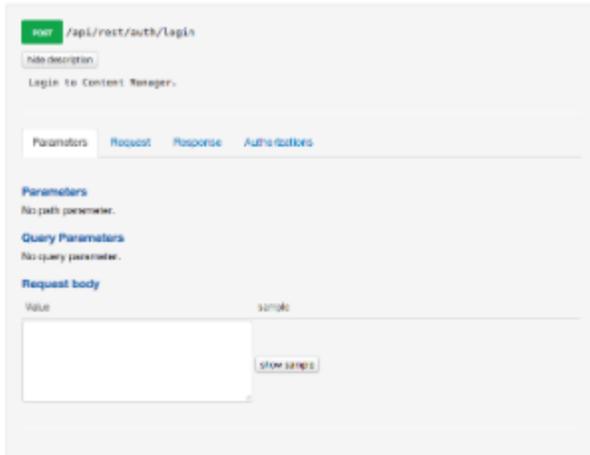
Request Tab

Response Tabs

(split into two shots because of the number of responses)

Authorizations Tab

File Upload

Semi-RESTful service for uploading files. These functions are not testable through the API docs page

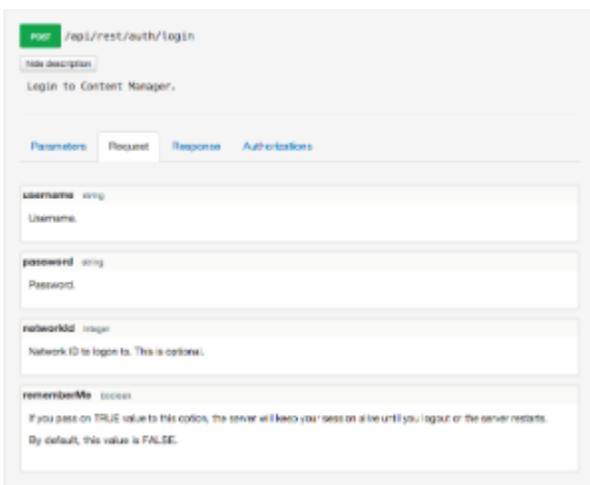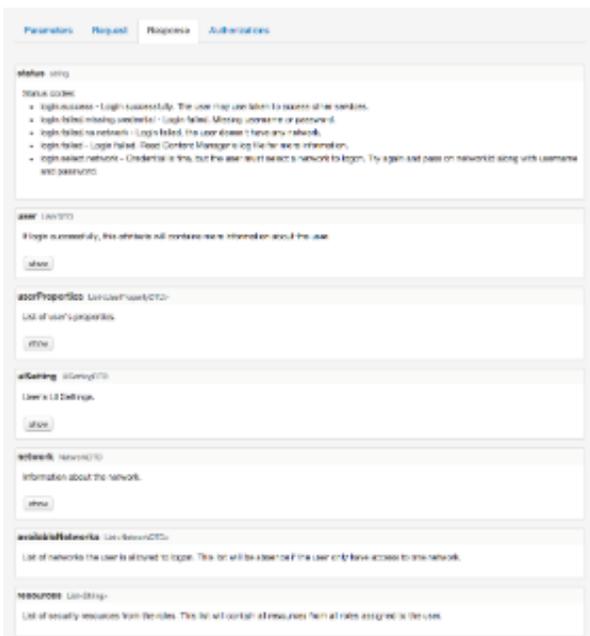| Service Name	API Call	Call Type	Call Description
Initiate upload	/api/rest/fileupload/init	POST	Begin a file upload and obtain a unique user id (uuid).
Upload File Part (PUT)	/api/rest/fileupload/part/{uploadId}/{offset}	PUT	Send one part of a multipart file upload.
Upload Single File (POST)	/api/rest/fileupload/part/{uploadId}/{offset}	POST	Upload media data. Once all data is transfered, the server will automatically call 'complete' service.
Upload finished	/api/rest/fileupload/complete/{uploadId}	POST	Indicates all parts of the file have been sent via fileupload/part

Media

RESTful service for media.

Service Name	API Call	Call Type	Call Description
Upload Single Media	/api/rest/media/{id}	PUT	Update Media
Find media's categories	/api/rest/media/{id}/categories	GET	List all categories for a media.
Find media's workgroups	/api/rest/media/{id}/workgroups	GET	List all workgroups for a media.

| Delete media by ID | /api/rest/fileupload/complete/{uploadId} | POST | Indicates all parts of the file have been sent via fileupload/part |
| Create media | /api/rest/media | POST | Create new media. |

> ⓘ **Note on Create Media API:**
> Name is unique for the HTML media type. Media needs to be uploaded into Content Manager, but the HTML media type CANNOT be uploaded. This service allows you to create new HTML media.
>
> Here is an example of request body for creating new HTML media.The *name*, *URI* and *mediaType* attributes are required. In this sample, we'll name the media 'Scala Home' and let URL be http://www.scala.com.
>
> ```
> {
>
> name : "Scala Home",
>
> uri : "http://www.scala.com",
>
> mediaType : "HTML"
>
> }
> ```

Players

RESTful service for players.

Service Name	API Call	Call Type	Call Description
Get current state for a player	/api/rest/players/{id}/state	GET	Returns information about the current state of a player.
Get current state for one or more player	/api/rest/players/{uuid}/states	GET	Returns information about the current state of one or more player. Use Storage service and store IDs of the players you want to retrieve the state. Store it as JSON object like this: `{ 'ids' : [1, 5] }` The Storage service will return an UUID to be used in the request parameter.
List Players	/api/rest/players	GET	Returns one or more player's information.
Update Players	/api/rest/fileupload/complete/{uploadId}	PUT	

> ⓘ **Note on Get Current State for One or More Player API:**
> The service will not raise an exception if you pass on a non-existing player id or player id belongs to another network.

> ⓘ **Note on Update Player API:**
> Assigning player metadata to a player: Use the **List service of Player Metadata** to find out the id of the Metadata and then pass that id to set the metadata value in player Consider a scenario where a boolean player metadata 'testBoolean' has been created. Now, To update the value of the metadata 'testBoolean' for a player we need to find the id of the metadata. The id of the metadata can be found using 'List Player metadata service' let's say it is '1'. So, the metadataValue object will look like this:
> ```
> {
> metadataValue: [{
> value: TRUE,
> playerMetadata:{
> id : 1 ,
> ```

```
    name : "testBoolean",
    datatype : BOOLEAN,
    valueType : ANY
    }
    }]
    }
```
The value attribute of 'metadataValue' object is set to 'TRUE' here. If the values are set to FALSE, they will be absent, as they are blank.

Users

Service Name	API Call	Call Type	Call Description
Create a user	/api/rest/users	POST	Create a new User
Delete a user by id	/api/rest/users/{id}	DELETE	Delete user by id.
Find a user by id	/api/rest/users/{id}	GET	Returns information about the user.
Update a User	/api/rest/users/{id}	PUT	Update user.

Administrating the System

Successful administration of any system requires some initial thought and planning. This section covers these topics as well as some of the day to day tasks, because, as the 6P law says: Proper Planting and Preparation Prevents Poor Performance.

Topics are broken into two sub-groups:

- Configuring Server Environments
- Administrating Access

Configuring Server Environments

This section focuses on preparing for, installing, tuning, and updating your server. It assumes that a technical administrator is managing these tasks. The first section provides guidance on the types of hardware you'll need to support your server based on your intended usage, and this is an important pre-cursor to installing the software. It is advised you scan most of these sections before diving into an installation.

Topics covered in this section include:

- Verifying Technical Specifications
- Planning Your Installation
- Installing Content Manager
- Verifying Your Server Settings
- Managing HTTP Connectors in Tomcat
- Tuning Content Manager
- Managing Maintenance Jobs
- Managing Backups
- Updating Your Network

Verifying Technical Specifications

> **Using Third Party Components**
> The certified Java release for 11.02 is Java 8 Update 73 (1.8.0_73). If you choose to upgrade Java to Java 8 Update 91 (1.8.0_91) or newer, the existing older Java version will be removed. However, this may cause issues with starting Tomcat because the Tomcat configuration may still point to the version directory for the older installation of Java. This issue can be solved by manually updating the Tomcat configuration.

Minimum System Requirements

> **Note:**
> Follow the link in the requirement column to view a page with more information that also contains a link that will allow you to download the certified version, if necessary.

> Using other versions of Apache Tomcat, specifically 7.0.71 and 7.0.72 will lead to issues related to special character usage in Content Manager.

Requirement	Purpose
Windows Server 2012R2, Windows Server 2008R2, Windows 8.1, Windows 7 Pro (for all of these, only 64-bit versions are supported)	Operating System. Your selection between these will vary based on the size of your network. Please review the sizing guidelines found below for more direction.
Java 8 Update 73 (1.8.0_73) (certified version)	Application platform
Apache Tomcat 7.0.70 (certified version)	Web server for the user interface to the application ⚠ **Warning About Upgrading Tomcat** Use of any version above 7.0.70 of Apache Tomcat is not compatible with your Content Manager. Scala advises that you not upgrade your Tomcat past this version as a result.
PostgreSQL 9.3.5-3 (certified version) **OR** Microsoft SQL Server 2008, 2012, 2014	Database to store information about content, scheduling and network
MongoDB 3.0.12 (optional) (certified version)	If you are auditing playback, this is required to support the Playback Audit Module.
Adobe Flash	Processes Flash files. ⚠ **Warning about Adobe Flash:** Scala Enterprise only supports Flash through version 10.3.x (e.g. 10.3.183.90) due to issues with significant memory leaks seen in newer versions of Flash. You might still choose to leverage your older Flash media assets, but we advise shifting to a different media format moving forward.
IAdea Bridge Server 4.3.41 (certified version)	
Python 2.7.11	Special Scala version.

No Longer Supported

Support for the following items has been discontinued:

- Web Services API's: The Legacy 1.x API's. Customers leveraging the SOAP-based API's will need to migrate to the version 2.x REST-based API's before moving to Release 11 or newer.
- MySQL databases: Please contact Scala Services to discuss migration or other options.
- 32-bit versions of Windows
- IAdea Bridge Server–this is temporarily unavailable.
- Microsoft SQL Server 2005.
- Windows XP

Hardware Sizing Guidelines

Based on the size of the system you wish to create, Scala offers technical sizing guidelines for the physical and virtual server hardware for:

Size	Definiton
Small	Having less than 50 Players, and 1.5 GB/hour of maximum total network Content updates.
Medium	Having less than 500 Players, and 15 GB/hour of maximum total network Content updates.
Large	Having less than 2000 Players, and 75 GB/hour of maximum total network Content updates. Network-specific design consultation required for deployments with more than 1,000 Players or with large data transfers.

Browser Support

⊘ **Mobile Browsers:**
At this time, mobile browsers are not supported by Scala Enterprise software.

Scala tests and supports accessing Content Manager from the following browsers:

- **Microsoft Internet Explorer:** Versions 9, 10 and 11.
- **Google Chrome:** Version 31 and higher
- **Mozilla Firefox:** Version 25 and higher
- **Apple Safari:** Version 7 and higher

⚠ **Caution: Note about Microsoft Internet Explorer 8**
Internet Explorer 8 will generally work for use with Content Manager, but should be considered "as is."

Small Network Technical Specifications

ⓘ **Note:**
This page focuses only on the Small Network specific technical specifications. Please review Verifying Technical Specifications before reading this page.

Minimum Storage	- Separate, dedicated, Operating System Partition of at least 40GB. - Separate, dedicated, Data Partition of 40GB, or larger, or at least 3X the estimated maximum amount of total content to active on the player network at any one time. - Software RAID-5 is strongly discouraged. - Direct Attached Storage (DAS): Actual HW-RAID, from vendors such as HP (SmartArray) /DELL (PERC)/ LSI (MegaRAID) /PMC-Adaptec, is encouraged for the physical hardware, but required for the virtual. - RAID is encouraged. The partitions should be implemented on a RAID-1, 1+0, or RAID-6, storage volume. Software RAID, as implemented on Intel RST Chipsets, is acceptable for configurations of RAID-1, or RAID-1+0, on smaller, < 20, Player networks. RAID-5 is strongly discouraged. - For a Virtual-Machine Host, a HyperVisor, HARDWARE RAID functionality is considered essential. - If you are using a Storage Area Network (SAN): One LUN should be implemented across at least two storage devices.
Recommended (Guest) Operating Systems	- Windows Web Server 2008R2 SP1(64-bit) - Windows Server 2008R2 SP1(64-bit) - Windows Server 2012 R2 - Windows 7 SP1 Professional/ Enterprise /Ultimate x64. - Windows 8.1
Minimum (Hypervisor/Host) Processor Type	- Intel Core-i5 2400S or better - AMD FX-63## or better - AMD Opteron 4### or better - For a virtual network, make sure your vCPU's are from a HyperVisor host with these processors.
System Memory..the OS is 64-bit	6GB+ - Dual-Bank - DDR3-1333(PC3-10600)/1600(PC3-12800), or faster. - For a virtual server, make sure 2GB of vRAM is allocated from a physical host with the above specifications.
Network Adapter	Any: - Stable 100Mbps or faster - Ethernet PHY/NIC with WHQL-certified device drivers.

Medium Network Technical Specifications

> ⓘ **Note:**
> This page focuses only on the Medium Network specific technical specifications. Please review Verifying Technical Specifications before reading this page.

Minimum Storage	• Separate, dedicated, Operating System & Log file Storage Volume of at least 80GB.
	• Separate, dedicated, Data Storage, (Database & Media), of 80GB, or larger, or: at least 3X the estimated maximum amount of total content to active on the player network at any one time.
	• The Hosting Virtual Machine HyperVisor—Direct Attached Storage (DAS): Actual HW-RAID from vendors such as HP (SmartArray) / DELL (PERC) /LSI (MegaRAID) /PMC-Adaptec is required.
	• A minimum of four physical storage devices, should be implemented for at least two RAID-storage-volumes with three partitions each:
	   • OperatingSystem + DB-Transaction-Logs/WAL's + Application-Logs; Temp-Swap + DatabaseTables + Media-Content
	   • Software RAID is not considered acceptable for Content Managers with more than 20 Players.
	• If HDD: Storage partitions should be implemented on a RAID 1+0, RAID-6, or RAID-6+0 arrays - a minimum of four physical storage devices comprising the two logical RAID-volumes.
	• If SSD: Two devices implementing RAID-1 can provide for adequate IOPS and redundancy.
	• If Storage Area Network (SAN): Two LUN's should be implemented. Example: one RAID-1 and one RAID-10, six HDD storage devices, (or four SSD's for two RAID-1 volumes) with the various partitions allocated to the storage volumes as per the DAS example.
	• For Virtual Hardware: Two Virtual Hard Disk drives stored on a independent physical storage volumes capable of delivering an average of 600, (4KB Random), IOPS to the vmCM instance.

Recommended (Guest) Operating Systems	• Windows Web Server 2008R2 SP1(64-bit) • Windows Server 2008R2 SP1(64-bit) • Windows Server 2012 R2 • Windows 7 SP1 Professional/ Enterprise /Ultimate x64. • Windows 8.1
Minimum (Hypervisor/Host) Processor Type	• Intel Core-i5 2400S or better • AMD FX-63## or better • AMD Opteron 4### or better. • For virtual hardware: Four vCPU's from a HyperVisor host with one of the above listed processors.
System Memory..the OS is 64-bit	• 8GB+ • Dual-Bank • DDR3-1333(PC3-10600)/1600(PC3-12800), or faster. • ECC memory strongly encouraged. • For virtual hardware, have 6GB of vRAM allocated from a physical host.
Network Adapter	Any: • Stable • 1Gbps or faster • Ethernet PHY/NIC with WHQL-certified device drivers.

Large Network Technical Specifications

> ⓘ **Note:**
> This page focuses only on the Large Network specific technical specifications. Please review Verifying Technical Specifications before reading this page.

Minimum Storage	- Separate Operating System storage volume, of at least 80GB, which also contains a partition for the CM Application/Support Services Log Files. - Separate, dedicated, Database storage volume of at least 40GB. - Separate Media-Data storage volume, of 200GB, or larger, or: at least 3X the estimated maximum amount of total content to active on the player network at any one time, and which also has a 40GB partition for placement of the database Write-Ahead-Logs/Transaction-Logs. - SSD's are strongly encouraged for the Database volume. SSD-caching of underlying HDD RAID-volumes is encouraged. - Storage volumes should be implemented as RAID-1, 1+0, RAID-6, or RAID-6+0, arrays. - Software RAID is not considered acceptable. - The Hosting Virtual Machine HyperVisor-DAS: Actual HW-RAID or SAN, from vendors such as EMC, UNISYS, NetApp, HP, IBM, DELL, LSI, or PMC-Adaptec is required. - A minimum of eight (HDD) or six (SSD) storage devices, should be implemented for at least three RAID-storage-volumes with two partitions each: - OperatingSystem + Application-Logs; DatabaseTables + Temp-Swap; Media-Content + DB-Transaction-Logs/WAL's - If Storage Area Network (SAN): At least three LUN's should be implemented on an array with a minimum of eight storage devices, (if HDD—six in RAID-1 pairs if SSD), with the six suggested partitions allocated as per the (Direct Area Storage) (DAS) example. - Three Virtual Hard Disk drives stored on a independent physical storage volumes capable of delivering an average of 800, (4KB Random), IOPS to the vmCM instance.
Recommended (Guest) Operating Systems	- Windows Web Server 2008R2 SP1(64-bit) - Windows Server 2008R2 SP1(64-bit) - Windows Server 2012 R2 - Windows 7 SP1 Professional/ Enterprise /Ultimate x64. - Windows 8.1
Minimum (Hypervisor/Host) Processor Type	- Intel Core-i7 2600K or better - Quad- or Hex- core Intel XEON CPU from the following product series: E3-####, E5-####, or better. - Hyper Threading should be disabled when < 10MB of L3 cache. - AMD Opteron 63## or better. - For virtual hardware, have Four vCPU's from a HyperVisor host with the above listed criteria.
System Memory..the OS is 64-bit	12GB+ - Triple or Quad-Bank [DDR3-1333(PC3-10600)/1600(PC3-12800)] or faster. - ECC memory - For virtual hardware, have 8GB of vRAM allocated from a physical host.
Network Adapter	- A Server-Class NIC with at least partial TCP-Offload Engine (TOE) (or Intel IOAT) functionality 1Gbps or faster - Ethernet PHY/NIC with WHQL-certified device drivers. - TSO (TCP Segmentation Offload) and LRO (Large Receive Offload)

Optimum Configuration Scheme

Used in conjunction with the specifications found on this page, this scheme will allow you to set your network up in the most efficient manner possible:

Set up three separate Logical Volumes, partitioned as follows:
- **Logical Volume A:**
    - **Partition A1:** Operating System
    - **Partition A2:** MongoDB data storage (if using Playback Audit functionality)
    - **Partition A3:**Log files (from Tomcat, PostgreSQL, Content Manager, etc.)
- **Logical Volume B:**
    - **Partition B1:** Storage for Content Manager media
    - **Partition B2:** Database WALs and Database transaction logs

- **Logical Volume C:**
    - **Partition C1:** Temp / Swap space
    - **Partition C2:** Storage for PostgreSQL or Microsoft SQL database

If you are using a centrally administered database cluster, Partitions B2 and C2 are unnecessary.

Where the Logical Volumes are placed, and what type of RAID array is recommended for each, depends on the storage type (SAN, SSD, or Hard Drive).

- **SAN (Storage Array Network)**
    - When using a SAN, each Logical Volume should be its own Logical Unit Number (LUN)
    - Each LUN should be capable of a minimum of 600 IOPS per thousand players, where an IOPS is defined as:
        - A set of 4KB random Read/Write actions in an approximate 70:30 Read/Write Mix.
- **NVMe SSD Storage**
    - With NMVe SSDs, RAID 1 is recommended for data protection.
    - Because of the high bandwidth of NVMe SSD, the Logical Volumes can be combined onto a single RAID 1 pair, or separate pairs may be used (depending on size/price)
- **SAS or SATA SSD**
    - With these SSD types, RAID 1 is recommended for data protection
    - Because of bandwidth limitations of these types of SSD, each Logical Volume should be on its own RAID 1 pair
- **Hard Drives (i.e. physical spinning disks)**
    - When using physical hard disks, Logical Volume B should be RAID 1+0 for data protection and performance. Logical Volumes A and C may be RAID 1, or RAID 1+0.
    - Each Logical Volume must be on its own RAID set.

Planning Your Installation

> ⓘ **An Important Note About Software Dongles:**
> Scala Content Manager and Designer come with a USB key (dongle). To ensure the correct driver is installed and used, please do not insert the USB key (dongle) until requested by the Installer program.

It is important to plan ahead before configuring and deploying your network. A successful deployment of a network at any size starts at the beginning. Take into consideration the initial network size and what it might be in the future. Also, take into consideration the size of the content, the frequency of change of this content and the number of players. Make sure to do the bandwidth calculations to ensure your network can handle the increased traffic load.

Content Manager can be installed on either physical or virtual server environments. The recommended server sizing guides for deployments in these environments can be found here.

When deploying larger networks, automation techniques are crucial - including the ingestion of content, the use of smart playlists and possibly extending the functionality/workflow by using the extensive Web Services API's that come with Scala Enterprise Content Manager.

Go through this checklist to make sure you are ready to install and configure Content Manager.

- Make sure you have the USB dongle.
- Select a server to install Content Manager. See the System Requirements for details.
- Choose a database type and location. Content Manager comes with PostgreSQL and will install it on the same computer as the application unless you specify otherwise. It does allow other database types, as well as a separate PostgreSQL server. If you plan to use an existing database server, make sure you have the necessary hostname and credentials to access the database.
- You will need to know the Content Manager server hostname and understand how users & players will access the server. Scala uses HTTP protocol over port 8080. The settings may depend on where things are located and if proxy server(s) or NAT firewalls are in place.

During the installation process, you will need to:

- Select the database you are using. If you will be installing the PostgreSQL server, you will be asked for a username and password that is used for the PostgreSQL service and accessing the database. This will be created for you by the installer.
- Select the password for the built-in Administrator user account.
- Choose a name for your network in Content Manager. This name will appear in Content Manager and is useful for customers that have more than one Scala network.
- Activate Content Manager. This requires either an Internet connection or the ability to download a license file and copy it to the Content Manager server.

After installation you will need to:

- Create user accounts.
- Add players.
- Create channels
- Upload and schedule content to play.

Useful Configuration and Setup Tips

1. Before installing Scala Enterprise Content Manager, choose hardware that matches your network size.
2. Configure Content Manager to use one port for player traffic. Use a different port for user traffic.

Tune these parameters to match your needs:

- Heartbeat rate
- Player plan polling interval
- Plan status interval
- Synchronization settings
- Turn off playback logs if you don't need them

Consider the following for scalability of your network:

1. Run your database on a dedicated machine. Choose your hardware carefully.
2. For reliability and performance, you should consider setting up your database in HA (High Availability) configuration or Master-Master replication.
3. Do regular backup and maintenance of your database. This is extremely important.
4. Add a cache server to your network to take the load off Content Manager. Doing so will greatly improve your scalability. Choose a caching strategy that fits you:
    a. Central Cache
    b. Regional Caches
    c. Local Caches
5. Use a dedicated server for caching. Linux is preferred.

Squid-Cache is tested and known to work. Relevant search keywords:

- Reverse proxy
- Web accelerator

Firewalls and Security

Almost all data transferred in a Scala Content Manager network uses HTTP. When Content Manager is installed, by default, port 8080 will be used. If you choose the default port, you must ensure that port 8080 is open between your Content Manager and Player machines. If you need to specify another port, please be sure to make it available prior to beginning the installation process.

Microsoft OS enables a software firewall by default. However, as part of the installation process, the installer asks you if it is okay to add exclusions to the Microsoft software firewall.

If you chose not to do so, you must add those exclusions manually. Otherwise your player(s) will not be able to communicate with Content Manager. For more information, please consult Microsoft's Windows Firewall documentation.

Many Anti-Virus packages also install (or have available) a software firewall, you must be sure that the Anti-Virus software firewall also allows your network traffic to pass through.

> ⓘ **Note:**
> The FTP protocol is only used when you specify Player-Direct FTP. This option applies for both Content Manager and Player. If you are not using this plan delivery type, then you do not have to add exceptions for FTP.

Large Network Deployment

Deploying a large network (100+ players) can be difficult, labor-intensive work. Each player should have local content. Individually created playlists for each player will not work, but you still want local content on your players.

The answer is player metadata and playlist conditions. Entering metadata for each player, even if you only have to do it once, can be too much work.

Player metadata can change over time so you need to do regular maintenance. What is the solution? Integrate and automate:

- Content Manager makes it possible for you to integrate directly using Web Services APIs
- You can link Content Manager to existing Customer Relationship Management (CRM) systems that store metadata.
- It lets you automatically create and maintain correct metadata on all your players with little or no manual labor.
- Web Services also lets you create and update playlists automatically.
- Makes local content on each player easy at any network size.

Installing Content Manager

> ⚠ **Important Note about Software Dongles:**
> Scala Content Manager and Designer come with a USB key (dongle).
>
> To ensure the correct driver is installed and used, please do not insert the USB key (dongle) until requested by the Installer program.

Installing Scala Enterprise Content Manager is a relatively simply process when followed closely. The install wizard will allow the user to quickly install the product.

Here's what will be installed:

- Content Manager

- Microsoft Visual C++ 2013 Redistributable
- Java Runtime (as of Release 11.03, Content Manager now ships with, and requires, Java 8 Update 25)
- Apache Tomcat Web Server (as of Release 11.03, Content Manager now ships with, and requires, Tomcat 7.0.70)
- PostgreSQL Database 9.3.5-3 (if selected)

Suggested components you may wish to install:

- Flash – So Content Manager can render thumbnails of SWF files.

Supported databases other than PostgreSQL:

- Microsoft SQL Server 2008, 2008 R2, 2012, 2014

> ⓘ **Note:**
> Before reading the Installation Steps below, it is recommended that you read the Advanced Configuration Options page, as the information contained there may effect your individual installation process.

Installation Steps

> ⓘ Please be aware that users have reported issues during this process when connecting remotely to Content Manager to configure, specifically with selecting a network name that is not *localhost*.

1. Insert the Disc

Insert the Content Manager disc into your computer. The installer should run automatically.

Another option is to right click on **Start** and select **Explore**. Open the drive for the disc. Then run **setup.exe** by double clicking on the icon. Then choose to install **Scala Enterprise Content Manager**.
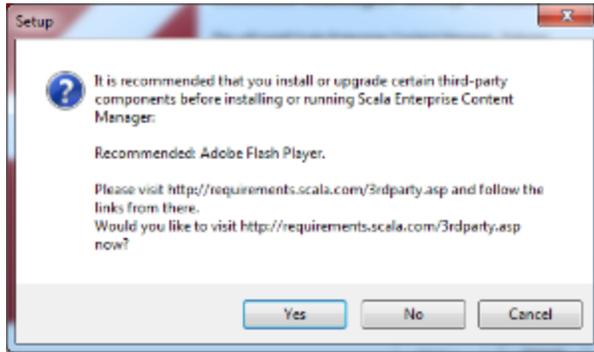
If you have Windows User Account Control On, you will be prompted for permission by your system. Scala recommends that this setting is turned off. This page provides details on how to change the setting.

2. Welcome

The Welcome dialog box offers the option of opening the Getting Started for 11.03 Guide. Otherwise, click **Next** to continue.

3. Third Party Components

Here you can choose to download additional components which are recommended but not installed automatically. Click **Yes** or **No** to continue.

4. Microsoft Visual C++ 2013 Redistributable

⚠️ **Caution:**
You will see the following note: "Scala Enterprise Content Manager requires Microsoft Visual C++ 2013 Redistributable Component. Would you like to install it now?"

Click **Yes** to continue.

5. Java Runtime

⚠️ **Caution:**
You will see the following note: Scala Enterprise Content Manager requires Java 8 Update 25, and a suitable version is not installed. Would you like to install Java now?"

If you do not have a supported version of Java Runtime installed on your computer, the installer will do this now. Click **Yes** to continue.

6. Apache Tomcat Server

⚠️ **Caution:**
You will see the following note: "Scala Enterprise Content Manager requires Apache Tomcat 7 Web Server (Version 7.0.70 or newer). Would you like to install Apache Tomcat 7 now?"

If you do not have a supported version of Apache Tomcat installed on your computer, the installer will do this now. Click **Yes** to continue.

7. End User License Agreement

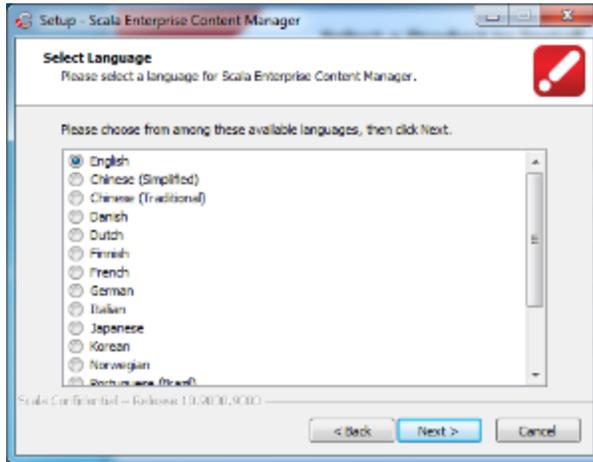Select the "**I accept the agreement**" button. Click **Next** to continue.

8. Select Language

A list of the languages supported by Content Manager will appear. Choose the one you would like to use and click **Next** to continue.

ⓘ **Note:**
While the link above, points to documentation for an unsupported version of Content Manager, the information on the page is still accurate.

9. Select Destination Location

The installation path will default to the following folder: **C:\Program Files (x86)\Scala\Content Manager**. If you want to change that location, click the **Browse** button to find the folder you want to use. Click **Next** to continue.
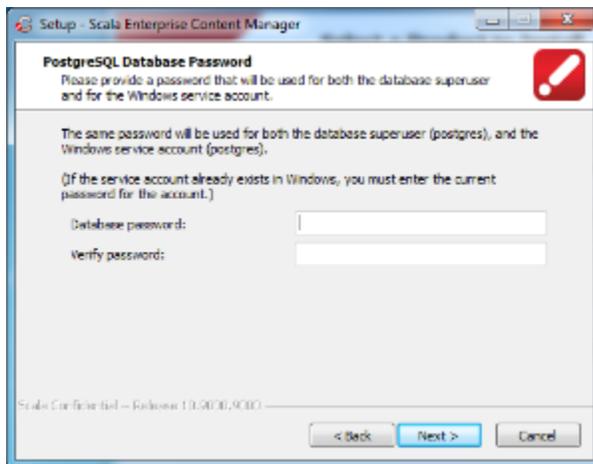
10. Database Installation Options

Choose whether to use the default PostgreSQL database server, or use an existing one. Click **Next** to continue.

> ⓘ **Note:**
> If you chose to use a different database server, skip ahead to Step 13, Web Application Configuration.

11. PostgreSQL Database Password

Choose a password that will be used for both the database Superuser and Windows service accounts.

> ⚠ **Warning:**
> You will need to enter this password again later in the installation. Make sure to save this password somewhere can retrieve when you need it.
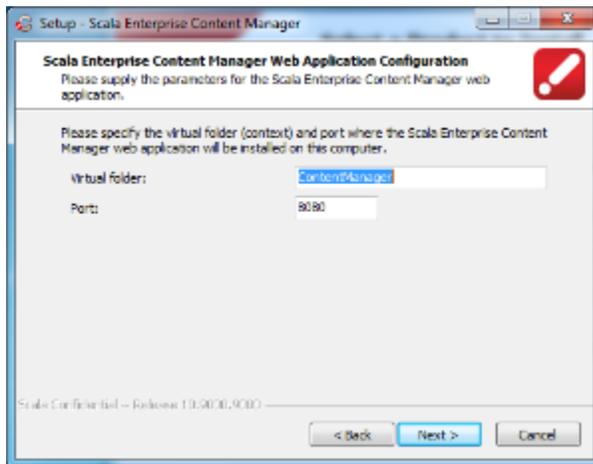
Click **Next** to continue.

Click **OK**.

12. PostgreSQL Data Storage Options

The installer will use the PostgreSQL default location or you can specify a custom folder. Click **Next** to continue.

13. Web Application Configuration

> **Note:**
> If you are using a different database server, you will resume here.

Enter the parameters for Content Manager's web application including the virtual folder and port. Click **Next** to continue.

14. Connection Configuration

Enter the parameters for Content Manager's web application including the port and connection host address. The web address you entered must be reachable by your players. An HTTPS connector can be used by selecting the check box. Click **Next** to continue.
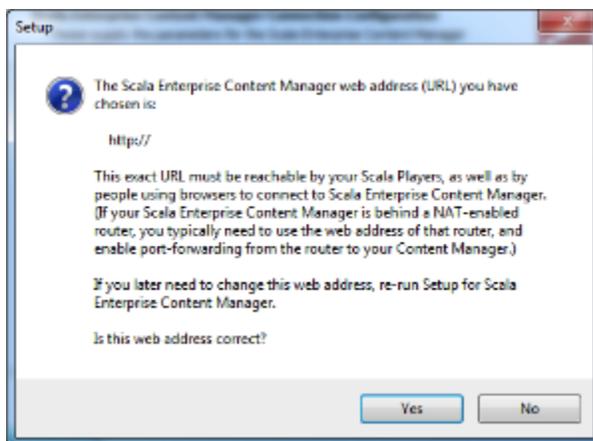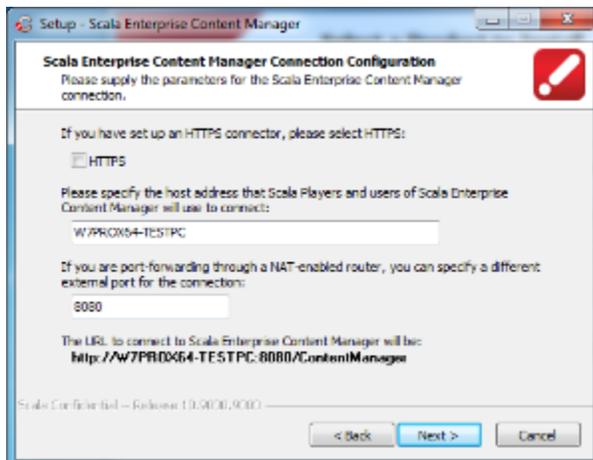
15. Tomcat Access Logs

Use the screen to turn the access logs for Tomcat either on or off. They are disabled by default, but can (re)enabled from this screen. Once you

have made your selection, click **Next** to continue.
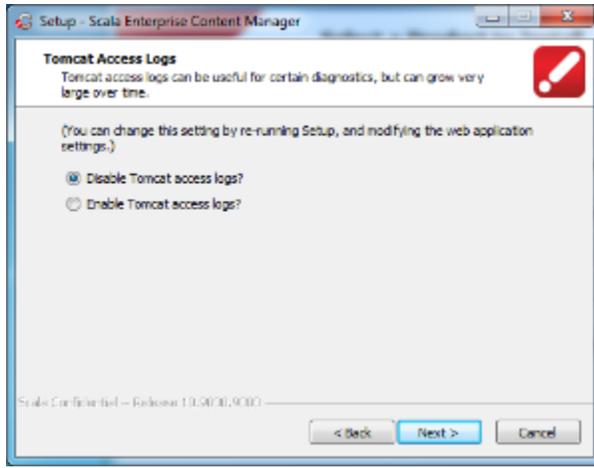
16. Select Data Location

Select the appropriate Data Location. This is where Content Manager will store media items. Make sure the drive has sufficient space available. If the default location is acceptable, click **Next** to continue.

> ⚠ **Warning:**
> The data folder selected cannot be at the root level (e.g. C:\). It must be in one of the subfolders of the root level (e.g. C:\Data).

17. Allow Microsoft Internet Connection Firewall Connections for Content Manager

The Microsoft Internet Connection Firewall must allow Content Manager to access network connections. Leave the box on the screen checked, and click **Next** to continue.

18. Allow Network Connections for Apache Tomcat

Click **Next** to allow network connections for Apache Tomcat. In order for the player(s) to communicate with Content Manager, the box on the screen must be checked.

19. Ready to Install

You are now ready to install. Click **Install** to continue.

20. Disable Apache Tomcat Default Page

For security reasons, click **Yes** to disable the default Apache Tomcat web page.

> ⓘ **Note:**
> Content Manager will be installed on your system. The file extraction process can be monitored with the progress bar. This may take several minutes. Additional Third Party installations may take place depending on what you selected earlier.

21. Insert USB Key

Content Manager comes with a USB dongle that you must insert into a USB slot on your computer in order to operate. Insert it and wait for the device to initialize, then click **Next**.

22. Setup Will Resume in Browser

Once the install is complete, an information dialog box will note that setup will continue in a browser. Click **OK**.

23. Finish Installer

Your browser will open, but you can return to the installer and click **Finish**. If you selected **View the Update Notes**, you can read them after installation is complete. A browser will launch in a separate window.

24. Welcome to the Setup Wizard

The setup process will be completed in a browser. Click **Next** to continue.

25. Administrator Password and Database Configuration

> ⚠ **Warning:**
> Scala does not support the modification of its database schema (which by default is cm). Doing this will lead to negative consequences when patching the database.

On this screen, you will need to choose and enter a password for the Administrator account which must be at least 8 characters in length. As with any password, make sure it is a secure password and save it in a safe location. Further down, select your database configuration from the **Type** b utton. Then enter the host, port and other relevant information. If you choose PostgreSQL, all but the password will be filled in for you. Otherwise you will need the host, username and password for a different database server. You can test the connection by clicking **Test**. Click **Save** to continue, once you have successfully tested your connection.

26. Database Creation

Content Manager will establish a connection and create the database schema. Click **Next** to continue. Once complete, the system will redirect you to the login page.
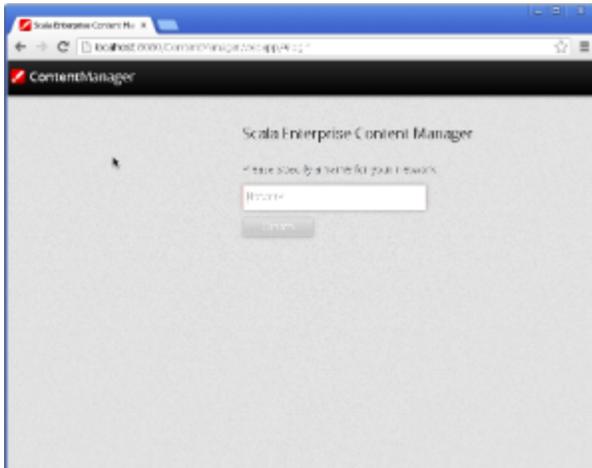
27. Login to Content Manager

Enter the Username (Administrator) and Password (previously chosen) then click **Sign In**.

> ⓘ **Note:**
> User names are not case sensitive, but passwords are.

28. Specify a Network Name

Select a name for your network. This name will appear in various places in the Content Manager interface and is helpful if you have more than one Content Manager.

> ⚠ **Warning:**
> Once you select a network name, you cannot change it.

Click **Create**. Content Manager is now available to use.

Advanced Configuration Options for Content Manager

Shortcuts to Sub-topics within this Page:

- Installation Options
  - Silent Installation
  - Common Installation Options
  - Scala Enterprise Content Manager Installation Options
  - Checking the Tomcat Java Memory Settings
  - Scala Publish Automation EX Module Installation Options
- Advanced Customization Options
  - Scala Enterprise Content Manager features.xml Options
  - MMOS.INI Options Applying to All Scala Products
  - Scala Transmission Server and Scala Player MMOS.INI Options
  - Scala EX Module MMOS.INI Options

Installation Options

The Scala installers accept various command-line parameters that affect the installation, or the values used in installation. To use these, open a command prompt and type

```
setup.exe /OPTION1=value /OPTION2=value ...
```

If *value* contains spaces, enclose it in quotes, for example

```
setup.exe /OPTION1="C:\Temp\My Folder"
```

Silent Installation

Silent installation can be accomplished by passing **/SILENT** or **/VERYSILENT** as command-line arguments. **/SILENT** installs ask no questions, but show installation progress.**/VERYSILENT** installs ask no questions and do not show progress during installation.

To assist with silent installs, the installers accept various additional command line parameters given below.

Common Installation Options

All the Scala installers accept:

- **/LOG=*filename***: Log the results to *filename*, which can be used to trouble-shoot a silent install.
- **/DIR=*folderpath***: Specify the full path where the product should be installed.
- **/LANGUAGE=*language***: Select *language* during installation.
  - These are the accepted values for Content Manager installs (NOT case sensitive):
    - BrazilianPortuguese
    - Danish
    - Dutch
    - English
    - Finnish
    - French
    - German
    - Italian
    - Japanese
    - Korean
    - Norwegian
    - Russian
    - SimplifiedChinese
    - Spanish
    - Swedish
    - TraditionalChinese
    - Turkish
- **/ROOTDATAFOLDER=*path***: Specify the path to be used for storing various configuration and data items. This corresponds to the **WIN3 2_RootDataFolder** keyword in **MMOS.INI** (see here), but the command-line option is also supported for Content Manager.

Scala Enterprise Content Manager Installation Options

- **/NODATABASE**: When installing, skip installation of PostgreSQL. Useful for silent installs where a different database will be used.
- **/SUPERPASSWORD=*password***: When installing PostgreSQL, use this as the super-user password.
- **/DBDATADIR=*datadir***: Use *datadir* as the database storage directory for the PostgreSQL installation.
- **/NOLOGIN**: If the newly installed version needs its database schema updated, the installer normally opens a web browser so that the Administrator can login so that the database-update can be performed. By specifying **/NOLOGIN** on the installer command-line, this step will be skipped. (The database-update still needs to be performed before Content Manager will fully start up.)
- **/CMDATAFOLDER=*path***: Use *path* as the storage location for Content Manager's media and other files. (*Note: specifying* **/ROOTDATA FOLDER=** *also changes this location, among other changes.)*
- **/NOSTARTTOMCAT**: At the end of installation, Setup will not start Tomcat if this option is specified.

Checking the Tomcat Java Memory Settings

When upgrading your version of Apache Tomcat, it is important to check the Java memory settings.

To change these settings, please go to: **Start Menu -> All Programs -> current version of Apache Tomcat -> Configure Tomcat.**

Once loaded, select the **Java** tab and set the values according to the following guidelines:

For 32-bit Apache Tomcat

1. Add ***InitialHeap (Initial memory pool)*** and set the value to **768** (-Xms option)
2. Set the memory value of ***MaxHeap (Maximum memory pool)*** equal to **768**

For 64-bit Apache Tomcat

1. On systems with less than 12GB RAM:
   a. Set the value of ***InitialHeap (Initial memory pool)*** equal to **1/2 of physical-RAM**
   b. Set the value of ***MaxHeap (Maximum memory pool)*** equal to **1/2 of physical-RAM**
      Example: System with 8GB RAM set ***InitialHeap*** and ***MaxHeap*** to 4GB
2. On systems with at least 12GB RAM:
   a. Set the value of ***InitialHeap (Initial memory pool)*** equal to **1/3 of physical-RAM**
   b. Set the value of ***MaxHeap (Maximum memory pool)*** equal to **2/3 of physical-RAM**
      Example: System with 12GB RAM set ***InitialHeap*** to 4GB and ***MaxHeap*** to 8GB

In a future release we will be adapting our updater to set these values.

Scala Publish Automation EX Module Installation Options

The Scala Publish Automation EX Module installer also supports these options:

- **/SERVICE**: Install the Publish Automation EX Module as a service (supported only on fresh installs).

Advanced Customization Options

Most Scala products have a variety of advanced configuration options available through the use of the **MMOS.INI** file. Content Manager uses a file called **features.xml** for some of its advanced customization.

MMOS.INI is a file that lives in the program's installation folder, e.g. **D:\Scala\Player** or **C:\Program Files\Scala\Designer**, or wherever your Scala product(s) are installed. Normally, each installation folder can have its own **MMOS.INI** file with its own settings.

The **MMOS.INI** file can be UTF-8, in which case it should begin with the UTF-8 *byte-order mark*, which consists of the hexadecimal values *EF BB BF*.

The **MMOS.INI** file begins with the optional *byte-order mark*, followed by the word **[Scala]** as shown inside square brackets, followed by one or more lines of the form

```
OptionName = value
```

Anything after a semi-colon is treated as a comment and is ignored by the Scala applications.

Here is a simple example:

```
[Scala]
; Open on the desktop in a borderless window
DESKTOP_Borderless = 1

; Force the window to be topmost always
DESKTOP_TopMost = 1
and so on.
```

You may find you already have an **MMOS.INI** file. If you do, you may wish to review which settings are already in force. But remember, anything after a semi-colon is a comment and does not have any effect.

If you do not have an **MMOS.INI** file, it is a simple matter to make one in any text-editor such as **Notepad**.

> **Windows 7 (and Newer) Note:**
> Under Windows 7 and up, if you try to create files inside the **Program Files** folder, Windows will create a per-user shadow-copy inside the Windows "Virtual Store". Depending on your system configuration and user rights, you may need to create the **MMOS.INI** file in a regular folder, then use Windows Explorer to drag it over to the correct destination inside Program Files.

Scala Enterprise Content Manager features.xml Options

The **features.xml** file lives in the Windows "application data" location, which is typically **C:\ProgramData\Scala\InfoChannel Content Manager 5\conf**.

The syntax for the **features.xml** file is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<feature-config>
<features><feature><name> featurename </name>
<enabled> true/false </enabled>
</feature>
<feature><name> featurename </name>
<enabled> true/false </enabled>
</feature>
</features>
</feature-config>
```

The following options are available:

- **PlayerProxyIP**: When Players are behind a proxy server, the IP address displayed for the Player is the address on behalf of which the proxy server is forwarding. To restore the original behavior (address of the proxy server), set this feature option to **false**.
- **UseTLS**: When using the SSL option for email notification, if you also need TLS then set this feature option to **true**.
- **PlangenCacheOptimizationsForBroadcast**: The plan generator has been optimized to be significantly faster in certain cases, especially when generating plans for a small number of players at a time, on a Content Manager with a large media library. This optimization is enabled by default for point-to-point players. To enable this optimization for Broadcast Players, set the **PlangenCacheOptimizationsForBroadcast** feature option to **true**.
- **UseXForwardedForIpBanning**: Content Manager has defensive logic to block repeated failed login attempts from the same IP address. When using a web accelerator (reverse proxy), the origin IP address will appear to be the address of the reverse proxy, which could lead to blocking too much. If your reverse proxy sets the **X-Forwarded-For** HTTP header, you can tell Content Manager to use the most

recent IP address from that header when making blocking-decisions for failed login attempts. To enable this feature, set the**UseXForwar dedForIpBanning** feature option to **true**.

- **SKIP_ACCESS_LOGS**: The Tomcat access logs can grow quite large on a busy server. By default, they are now no longer included when using the **Download Logs** feature. This can be changed by setting the **SKIP_ACCESS_LOGS** feature option to **false**.
- **DBPoolMonitoring**: Enables "DB Pool Statistics" tab in System -> Server Settings.
- **EmulateTransmissionServer**: Enabling this flag will allow users delivering plans to their Players via Content Manager Direct will speed up the delivery plan process. All Players using Point to Point distribution must use Content Manager Direct. For example, if you have 100 total Players, and one of them uses Player Direct-FTP, the feature will not be enabled. This feature does not apply to Broadcasts Servers or IAdea Bridge Servers.
- **ExternalSourceMediaType**: This is set to **False** by default. It can be set to **True** if your Player is one of the small subset of Players, such as the Samsung SSP Player, that supports External Source media items.

MMOS.INI Options Applying to All Scala Products

WIN32_RootDataFolder:

Control the location of all Scala config files, logs, settings, temporary files, etc.

```
WIN32_RootDataFolder = path
```

When set, Scala data that is normally stored under the Windows-standard configuration areas is stored instead under the specified path. Also the Scala temporary folder appears under the specified path. Thus, most of the locations where Scala reads and writes files can be controlled.

This is the simplest way to move the locations where such files are stored. There are additional **MMOS.INI** keywords to move specific folders such as the **Content** and**LocallyIntegratedContent** folder, but it is often better to move them all with this one keyword.

You can install the products specifying **/RootDataFolder=*path*** on its command-line, and Setup will set **WIN32_RootDataFolder** correctly (creating an**MMOS.INI** file if necessary, otherwise modifying the existing one.)

The Content Manager installer supports **/RootDataFolder=*path*** on its command-line. This sets **WIN32_RootDataFolder** for Content Manager itself, as well as for the Transmission Server and Server Support components. (In those components, the installer also sets **WIN32_CommonPro ductRootDataFolder**, so those components can locate Content Manager's location where needed.

> (i) **Note:**
> For Content Manager, changes to **WIN32_RootDataFolder** must be done using the installer, rather than by hand-editing the **MMOS.INI** files.

> (i) **Note:**
> This option is not yet supported for the Playback Audit Reporting Module.

WININET_EnableServUDirectoryCacheKludge

The directory caching of the Serv-U FTP server can return incorrect results. Scala recommends that directory caching be disabled when using the Serv-U FTP server. However, if this is not possible you can enable a workaround by adding this to your **MMOS.INI**:

```
WININET_EnableServUDirectoryCacheKludge = 1
```

(The workaround will hurt media transfer performance.)

TCPIPTOOLS_FTPClientKeepAliveCommandChannel

Setting this instructs the FTP client to set the socket "keep-alive" option on the FTP command channel. This can resolve certain command-channel timeouts that can sometimes be caused by intervening firewalls or routers. To enable this, add the following to your **MMOS.INI**

```
TCPIPTOOLS_FTPClientKeepAliveCommandChannel=1
```

Scala Transmission Server and Scala Player MMOS.INI Options

These MMOS.INI Options apply to both the Scala Transmission Server service and Scala Player:

SSCOMMON_EncryptionKey

Set custom encryption key for protecting usernames / passwords.

The Scala network encrypts all usernames and passwords that are transmitted or stored. Health monitoring messages are also encrypted, and job command files and responses are sealed as well. You can select your own custom encryption key by setting:

```
SSCOMMON_EncryptionKey = encryption-key-string
```

Set this on both Transmission Server and all Players or else things will not function. Note that there is no support for migrating stored usernames/passwords from one key to another, so this key is best established from the beginning.

The **encryption-key-string** should be 5-7 characters in length (40 to 56 bits).

Scala EX Module MMOS.INI Options

Publish Automation EX Module

SCRIPTXFER_EnableUTF8ContentFiles: When set, forces the publish operation write the top-level Content XML files in UTF8.

```
SCRIPTXFER_EnableUTF8ContentFiles=1
```

Updating Content Manager

After you have setup your Content Manager during Installing Content Manager, it will become necessary to upgrade your version to a more current one for various reasons. When doing this, it is not necessary to complete the entire install process again.

The latest Scala updates can be downloaded at http://www.scala.com/updates. Please remember to have your product serial number(s) in order to download any updates.

If you have kept your software up to date, then you can apply the newest update without having to apply any in-between updates you may have skipped by using the installer.

> ⚠ **Caution:**
> Updating your Content Manager with new versions is dependent on your having an active Scala Maintenance plan and a corresponding License. Updating your license file with your software update is important.

Supported Upgrade Path

If you are looking to upgrade your Scala software, you must do so via a supported path.

The following versions have been approved for direct upgrade to version 11.03:

- Release 11.00.11
- Release 11.01.04
- Release 11.02.04

Staying on a currently supported version is key to ensuring that your upgrade path is supported as well. If your currently used version is out of support, then we advise you look at the upgrade path for the prior version to this one and work backwards until you find a suitable upgrade path for your needs.

Third Party Components

Click on the link for instructions on how to update the component to a version that meets the requirements listed in Verifying Technical Specifications.

- Apache Tomcat (11.03 requires and ships with 7.0.70)
- PostgreSQL (11.03 requires and ships with 9.3.5-3)
- Java (11.03 requires and ships with 1.8.0_73)

Connection Configuration

Enter the parameters for Content Manager's web application including the port and connection host address. The web address you entered must be reachable by your players. An HTTPS connector can be used by selecting the check box. Click **Next** to continue.
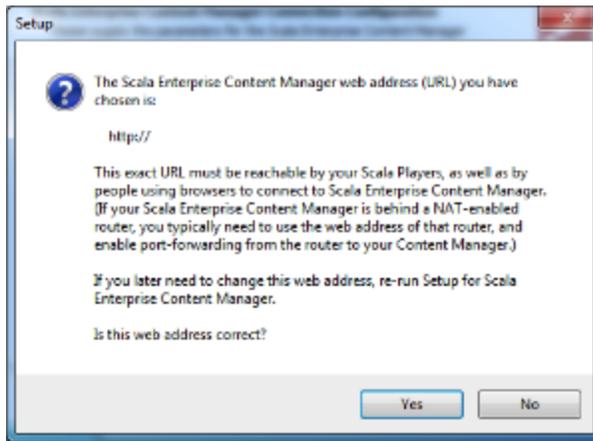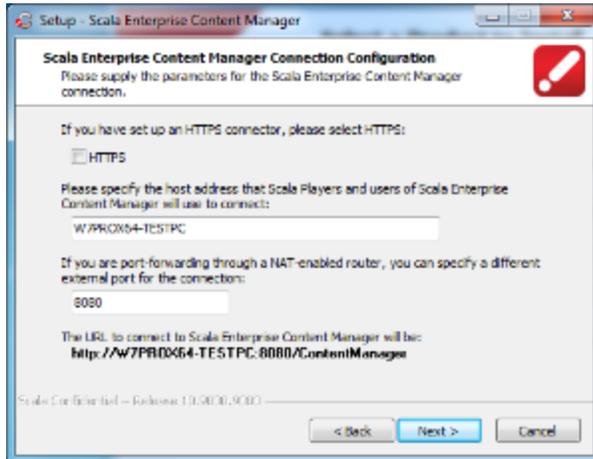
Playback Audit Reporting

- If you are making a fresh install, please see Installing Playback Audit Module for the First Time.
- If you are moving your data from an earlier version, please see Migrating Playback Audit Data from a Pre 11.00 Release.

Verifying Your Server Settings

To access **Server Settings,** go to the **System** menu and then select **Administration**.

The screen that appears has four tabs, which provide you with information about your installation of Content Manager.

System Information

This tab provides an overview of the versions of software installed, system paths and the database configuration.
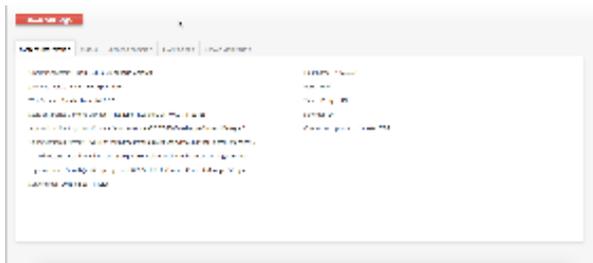
Software Versions

- **Operating System:** Operating system version and architecture.
- **Java VM:** Java virtual machine version.
- **Web server:** Apache Web server version.
- **Scala Enterprise Content Manager:** Content Manager version.

> ⓘ **Note:**
> For more information about specific versions of Java, Apache, etc that should be needed, please refer to the Verifying Technical Specifications page.

System Paths

- **Application directory**: Where the web application is installed.
- **Configuration directory**: Where the configuration files are stored.
- **Data directory**: Where the data directory is located.
- **Log directory:** Where the log directory is located.

Client Connection

> ⚠ **Caution:**
> if you make any changes to the Client Connections, your network of Player(s) might not be able to connect back to Content Manager. You will need to reconfigure any existing players to use the new settings.

When you install Content Manager, the client connection settings are pre-configured, but you can make edits to some of the settings in this tab.

- **Use HTTPS:** Can be set to either yes or no. Allows your Content Manager to use an https URL.
- **Connection host address:** Host address Content Manager will tell players to connect to.
- **Port:** Port number the Content Manager will listen to for requests.
- **Virtual Folder:** Path that Content Manager uses within the web server. For example, the full path after the hostname and port would be: www.myhost.com:8080/VirtualFolder
- **URL:** URL of your Content Manager. This will not make changes to any of the other settings in this tab.

If you do make changes to this tab, click either **Save Changes** or **Save and Close** to commit them.

Status

This page shows information regarding memory usage and connection details.

- **Maximum server memory**: Maximum amount of memory available to the Java Virtual Machine (JVM).
- **Free memory**: Amount of free memory within the JVM.
- **Number of processors**: Number of processors available to the JVM.

LDAP Config

Scala Enterprise Content Manager can be configured to integrate with Microsoft's Active Directory or LDAP servers for user-authentication (verification of username/password) and user-authorization (roles and workgroups) from the central directory servers. This screen allows for the enabling of that configuration only.   For more information about LDAP configuration and management, view Managing Authentication and Authorization via LDAP and Active Directory.

Server Monitoring

Scala Enterprise Content Manager allows access to a Server Monitoring screen that contains performance graphs and statistics

Click on **Open Server Monitoring** to see them, and a group of charts similar to the ones you see in the image below will appear.
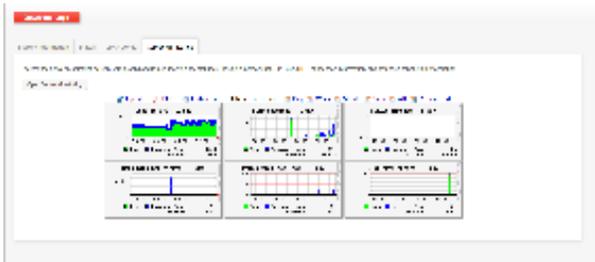
Download Logs

Clicking on this link will allow to collect logging information for your Content Manager if requested by a support representative. It provides information on your system's configuration.

Managing HTTP Connectors in Tomcat

Custom configuration of the connectors in server.xml can be achieved by re-running the Content Manager installer and clicking the checkbox to modify the Connector settings.

An example of an additional HTTP connector on port 9090 is as follows:

```
<Connector connectionTimeout="20000" enableLookups="false" maxThreads="200"
port="9090" protocol="HTTP/1.1" redirectPort="8443" useBodyEncodingForURI="true"/>
```

HTTPS from a proxy server, such as Apache HTTPD or NGINX can now be used without the need to configure SSL within Content Manager or Tomcat.

An example Apache HTTPD configuration use mod_proxy would be:

```
<Proxy *>
     Order deny, allow
     Allow from all
</Proxy>
SSLProxyEngine      On
ProxyRequests       Off
ProxyPreserveHost   On
ProxyPass           /ContentManager      http://cm.host:8080/ContentManager
ProxyPassReverse    /ContentManager      http://cm.host:8080/ContentManager
```

More information on administering and configuring Apache Tomcat connectors can be found here:

https://tomcat.apache.org/tomcat-7.0-doc/config/http.html

https://tomcat.apache.org/tomcat-7.0-doc/config/ajp.html

For administrators that prefer to configure HTTPS within Tomcat, rather than using a proxy server, see the following guide:

http://tomcat.apache.org/tomcat-7.0-doc/ssl-howto.html

Tuning Content Manager

> ⊘ **Warning:**
> Scala does not support the modification of its database schema (which by default is cm). Doing this will lead to negative consequences when patching the database.

Database Tuning

The number of database connections required by Content Manager increased in Release 10.5 and again in Release 11.00. Some customers upgrading from earlier versions of Content Manager may have to tune the maximum number of allowed Database Pool connections on their Content Manager or they will experience issues such as slow performance and CPU spikes.

The best values for **Max Pool Size** (set in the Content Manager UI), and number of connections (set in the database configuration) will vary from system to system based on the complexity of the network: the number of Players, Channels, Playlists, Media Items, etc. If you are experiencing symptoms of CPU spikes, poor performance, or Content Manager unresponsiveness after upgrading, try increasing the Max Pool size and database connectors as follows:

| Max Pool Size (Content Manager UI)	90
Postgres Database Connections	100 (default for PostgreSQL)
MS SQL Database Connections	Leave set to default of 'unlimited'

> ⓘ **Note:**
> Under no circumstances should the Max pool size in the UI be set to a value greater than 90% of the database's pool of connections (Max Pool Size <= .9 * database connections)
> Changing the number of database connections in Postgres may require re-evaluation of Shared memory configuration for Postgres. This needs to be assessed on a case by case basis.

Configuring Database Connections on the Content Manager

The default number of database connections can be determined by taking your connection pool partition count and multiplying it by the number of connections per partition. For example, if you have three pool partitions with a maximum of 30 connections per partition, you would have 90 connections. You can modify this value on the **Home->Database Configuration** page in the Advanced tab. Making changes to these settings requires the new values to be saved and a Tomcat service restart.

If you make any changes to the schema in the UI, Content Manager will force a database reindex on the next restart after making that change as a result.
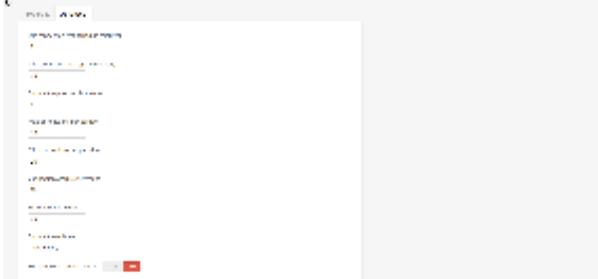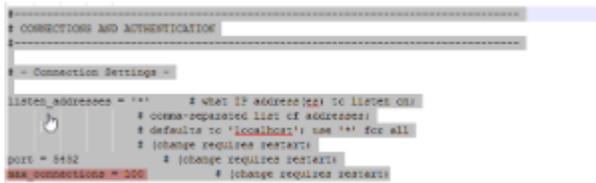

Configuring Database Connections on the Database

PostgreSQL

On PostgreSQL implementations, the number of database configurations is defined in the postgresql.conf file. The default location for the postgresql.conf file is:

```
Program Files\PostgreSQL\<Postgres version>\data\postgresql.conf
```

The actual location of this file depends on the specific customer installation.

Changing the number of database connections in postgresql.conf requires the file to be saved, and also a restart of both Tomcat and the Postgres services. The postgres configuration can be modified without restarting the service by reloading the postgres configuration parameters via:

```
"~\PostgreSQL\9p2pX\bin\pg_ctl reload -D D:\PostgreSQL\9p2pX\data".
```

Then restart Tomcat.

MS SQL

MS SQL defaults the max number of connections to 0, which corresponds to 32,767 connections. If the number of connections is set to 0, then no change is required (32767 connections is sure to be adequate). Some clients may restrict the maximum number of connections for a given application to protect database clusters from applications that grab too many connections.
To change the number of connections available for a database on an MSSQL instance:

1. Open Microsoft SQL Server Management Studio
2. Right click on the database instance to be changed and select **Properties** (default name is 'cm')
3. Click on **Connections**.
4. Change the Maximum Number of concurrent connections **(0=unlimited)** to the desired value.
5. Click **OK.**

Alternately, the number of configuration can be changed via TRANSACT-SQL:

```
USE database-instance-name;
GO
EXEC sp_configure 'show advanced options', 1;
GO
RECONFIGURE ;
GO
EXEC sp_configure 'user connections', ### ;
GO
RECONFIGURE;
GO
```

Additional Topics

Further discussion of Tuning can be found in Search Engine Indexing.

Search Engine Indexing

Content Manager has an indexed search engine, which offers full-text search for key areas of the application. It works by using Lucene to store indexed data. The search data can be accessed using the new search APIs that enable type ahead search suggestions and faceted search results.

See the API Docs for more information on the **Faceted search** API under Media, Templates, Playlists and Players.

Type ahead search suggestions are available in the new search bars added to Media Items, Templates, Playlists and Players list pages. Faceted search filters are also available on these pages. They will show an item count by filter type on the left hand filter selection.

How Indexing Works

The search engine indexes data into Lucene data files on the filesystem. This process will normally happen automatically as data is created or updated. A bulk process can happen during upgrading or after restoring data. The Database Configuration menu (Advanced tab) provides an option to **Force indexing on next restart,** which will trigger the bulk indexing on the next restart. This will cause the next restart to take longer than normal and can be monitored by watching the Content Manager logs.

The search engine indexes are saved to the **.../Scala/InfoChannel Content Manager 5/Temp/LuceneIndex** directory. To prevent the time required for reindexing it is recommended that this directory be included when backing up and restoring.

Advanced Reindexing Options

Forcing a reindex can be tuned by creating or modifying the **.../Scala/InfoChannel Content Manager 5/Conf/index.properties** file. The following properties are available:

- **index.forceIndexing:** If set to **true**, the system will reindex all data on the next startup. This value is reset after a full index. Valid values are true or false.
- **index.purgeAllOnStart:** - If set to **true** (also the default value), the system will purge all old index data the next full reindex. Valid values are true or false
- **index.optimizeAfterPurge:** Determines if index optimization should be run before starting, after the purgeAll. Has no effect if index.purgeAllOnStart is set to false. Default value is true. Valid values are true or false.
- **index.optimizeOnFinish:** Determines if index optimization has to be started at the end of the indexing process. Default value is true. Valid values are true or false.
- **index.batchSizeToLoadObjects:** Sets the batch size used to load the root entities. Default value 300. Valid values are positive integers.
- **index.threadsToLoadObjects:** Sets the number of threads to be used to load the root entities. Default value 8. Valid values are positive integers.

More Information

For more information, please go visit one or both of the following:

- https://lucene.apache.org/
- http://hibernate.org/search/

Managing Maintenance Jobs

Depending on the amount of activity on your Content Manager, it may be beneficial to perform some tasks automatically. Content Manager allows you to do this via a Maintenance Job.

The following tasks can be completed by an automated maintenance job:

- **Delete Files**: Removes specified file(s) on the player(s).
- **Install File**: Sends file to a specified folder on the player(s).
- **Install Software Update**: Updates the player(s) with a new version of Scala software (also reboots the player to complete the update).
- **Install System File**: Sends a file to a folder on the player(s) and reboots.
- **Reboot**: Restarts the player(s). Scala recommends this be done on a regular interval to improve stability.
- **Retrieve Content**: Grabs media files from the player(s) content folder.
- **Retrieve Files**: Grabs files from a specified folder on the player(s).
- **Run Command**: Executes a command or program remotely.
- **Firmware Update:** Updates the firmware on a player and forces a reboot. This is only supported for your licensed IAdea playback devices, and occurs via a maintenance job.

Understanding the Dashboard
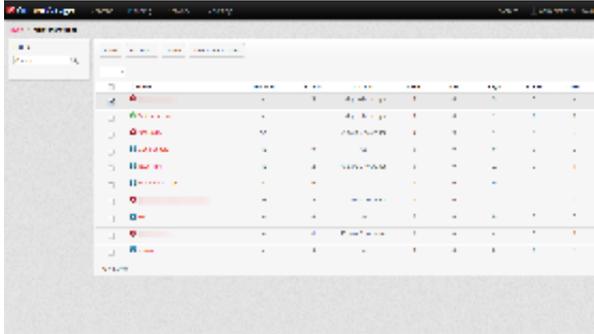
The following table offers an explanation of the icons that will appear within this dashboard.

Icon	Seen When
✅	Maintenance job successfully executed
❌	One of the tasks in the maintenance job execution failed
❓	Maintenance job execution status is other than successful or failure

Creating a Maintenance Job

The tasks that can be performed through maintenance jobs will depend on the Player Type. For the purposes of the examples on this page, you will be installing a software update.

1. In the menu at the top of the page, click on **Network** and select **Maintenance Jobs**
2. Create a new maintenance job by selecting **+ New** at the top of the screen.
3. In the box that appears, define the **Player Type** for this maintenance job.
4. Enter a **Name** and **Description** for this job.
5. Pick how you wish to select the affected players, by **Player Name** or by **Player Group,** as the maintenance job will not make any changes to your Content Manager without doing so.

6. It is important to select a Player(s) by one of these methods (by Name or Group), because without doing so, whatever you are trying to do with the maintenance job will not run.
7. In the window that appears, go to the **Tasks** tab. Select a task type and then continue.

8. Upload the files to Content Manager, and once they have been uploaded successfully, they may be selected.
9. Once the task has been defined, then the schedule for when this job will run.
10. Click on either **Save Changes** or **Save & Close** once you have added your maintenance jobs.

Editing a Maintenance Job

1. Select **Network** and then choose **Maintenance Jobs.**
2. Select the Maintenance Job you want to edit.
3. In the task tab, click **Edit.**
4. In the screen appears, Click on **Change** to select a different file.

5. Make your desired changes and click **Save**.

Deleting a Maintenance Job

1. Select **Network** and then choose **Maintenance Jobs.**
2. Select the Maintenance Job you want to edit
3. In the task tab, click **Delete**.
4. Click on either **Save Changes** or **Save & Close** once you have deleted the necessary maintenance jobs.

Resubmitting a Failed Maintenance Job

1. Select **Network** and then choose **Maintenance Jobs.**
2. Choose the maintenance job with the symbol and click **Re-Submit Job**.
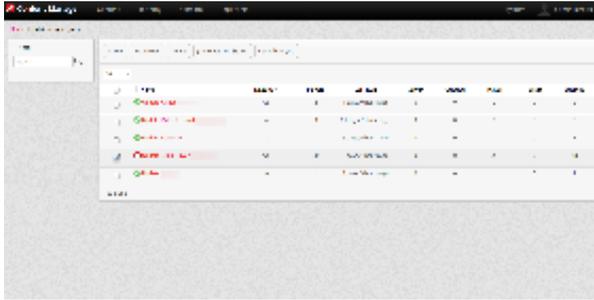
Managing Backups

As with any information based system the discipline of creating Backups are a necessity to ensure you can recover from a system disaster. The frequency will depend from system to system. Backups are also strongly advised prior to updating your system so that you can roll back to a working state if there is a problem..

This section will discuss the following topics:

- Creating Backups
- Restoring from Backups

Creating Backups

Content Manager does not contain an automated backup/restore feature, so these instructions are organized as a set of manual steps.

The backup process described assumes that you have copied or archived the necessary files from the Content Manager system to another location as to not have an adverse effect on your production environment and ensure that your backup is safely removed from it.

The Restore process relies on either copying or extracting the files from the backup location to the original location. Scala does not make recommendations as to where your backup files should reside. However, it is assumed good backup principles are followed.

Following the Backup Process

Step 1: Stopping Apache Tomcat and Transmission Server services

Since the backup process is not an integrated part of Content Manager, the Apache Tomcat and Transmission Server services have to be stopped first.

1. Go to **Start -> Control Panel** then double-click on **Administrative Tools**.
2. Double-click on **Services**, and then find the **Apache Tomcat** service.
3. Right-click and select **Stop**. Wait for the service to stop completely.
4. Find the **Scala Transmission Server** service.
5. Right-click and select **Stop**. Wait for the service to stop completely before moving to the next step.

Step 2: Backing up the Data Files

All data files must be backed up. By default, the location of this directory is:

```
C:\Program Data\Scala\InfoChannel Content Manager 5\Data
```

If your data location differs the one listed above, you can find the location in Content Manager by going to **System**, selecting **Server Settings**. In the **Systems Information** tab, find the line marked **Data directory**. You should backup all files.

Step 3: Backing up the Configuration Files

The following configuration files must be backed up. By default, the location of this directory is:

```
C:\Program Data\Scala\InfoChannel Content Manager 5
```

You must backup these files and folders/subfolder within:

- **Conf:** All files and subfolders.
- **License:** All files.
- **Logs:** Not necessary, but you might want to keep the log files.
- **SavedValues:** All files and subfolders.
- **License.xml:** The license file.

> ⓘ **Note:**
> The default location of the data files exists in the same location as the configuration files. So if you are using the Content Manager installation default values, you can combine step 1 and step 2.

You must also backup the configuration files for the Transmission Server. By default, the location of this directory is:

```
C:\Program Data\Scala\ InfoChannel Transmission Server 5
```

All files and subfolders should be backed up.

Step 4: Backing up the Database

The instructions for backing up your Content Manager database will vary based on the type of database server you are using. Instructions for the following database types are provided individually at the bottom of this page:

- PostgreSQL
- Microsoft SQL Server 2008 R2

Step 5: Start Apache Tomcat and Transmission Server services

The backup process is now complete. You can start Apache Tomcat and Scala Transmission Server services.

1. Go to **Start -> Control Panel** then double-click on **Administrative Tools**.
2. Double-click on **Services**, and then find the **Apache Tomcat** service.
3. Right click and select **Start**. Wait for the service to start completely.
4. Find the **Scala Transmission Server** service. Right-click and select **Start**. Wait for the service to start completely.

You can now access Content Manager again.

Backing up your Database

PostgreSQL

Backing up the PostgreSQL database is performed by either using the pgAdmin tool or the command line tool pg_dump.exe.

A detailed explanation of the procedure using the pgAdmin tool follows as well as a short example of pg_dump.exe usage. The following steps illustrate the step-by-step process of performing a backup of a PostgreSQL database schema cm_01.

1. Open the pgAdmin tool by navigating to **Start -> Programs -> PostgresSQL -> pgAdmin.**

> ⓘ **Note:**
> There is a significant performance increase in running pgAdmin from the same computer that the PostgreSQL database server is running on.

2. Connect to your database server using the same Username and Password you entered when you installed Content Manager. Select the database schema you want to backup, then right-click and select **Backup**.
3. Set the Format to **tar** in the backup dialog, choose a path and filename for the backup file, and press **OK** to start the backup.
4. Verify the result. Wait for the backup process to finish, and verify that the final message is "Process returned exit code 0". If the exit code is different, this means that the backup was not successful.

Using the command line, you may choose to use the command line tool pg_dump.exe to backup the database. To create the same backup as shown above, execute the following command:

```
pg_dump --format=custom --compress=5 -U postgres -W cm_01 > C:\tmp\backup\db.backup
```

Please refer to the PostgreSQL manual for more details when using the command line tools.

Microsoft SQL Server 2008 R2

A backup of the Microsoft SQL Server 2008 R2 can be performed using the Microsoft SQL Server Management Studio. There are many different types of backup tools available for Microsoft SQL Server 2008.

This document only demonstrates how to create a single complete backup. If your networked database uses Microsoft SQL Server 2008 R2, you

are likely to use a more sophisticated (incremental) backup policy.

Please consult the Microsoft SQL Server 2008 R2 documentation or your database administrator for more information.

The following steps illustrate the step-by-step process of performing a backup of a Microsoft SQL Server 2008 R2 database schema **cm**.

1. Connect to your database server using Microsoft SQL Server Management Studio, and select the database you want to backup. Choose **Back Up.**
2. Choose one or more destinations for the backup. Scala recommends that the other options remain unchanged.
3. On the **Options** page, select **Overwrite all existing backup sets** if you want to overwrite old backups. Scala recommends that the other options remain unchanged.
4. Press the **OK** button to start the backup. If the backup was successful you will see a message saying that the backup completed successfully.

MongoDB v.3.0.x

To backup a MongoDB instance, the **mongodump** command line utility is used. You can specify the database to export via the "-d" options. If you do not specify any options, he files are written to the "dump" folder in the current directory.

Below is an example of an output using this utility.

```
mongodump -d pam
writing pam.logDetail to dump/pam/logDetail.bson
writing pam.system.indexes to dump/pam/system.indexes.bson
writing pam.logReport to dump/pam/logReport.bson
writing pam.mongoDBPatch to dump/pam/mongoDBPatch.bson
writing pam.logReport metadata to dump/pam/logReport.metadata.json
writing pam.mongoDBPatch metadata to dump/pam/mongoDBPatch.metadata.json
done dumping pam.mongoDBPatch (2 documents)
done dumping pam.logReport (6 documents)
writing pam.logDetail metadata to dump/pam/logDetail.metadata.json
done dumping pam.logDetail (25 documents)
```

One done using authentication would look like:

```
mongodump --host <host> --port <port> -u <username> -p <password> -d <database>
--authenticationDatabase admin
```

For more information on using command line utilities, please visit mongodump 3.0.x.

Restore from Backups

By following the steps below, you can restore your Content Manager data from a previously created backup. There are many reasons for performing a restore. For example: you are recovering from a system crash (data loss) or reverting changes to the data.

Following the Restore Process

Step 1: Perform a New Install

1. If you're restoring to a system that already has Content Manager installed, you must uninstall it first.
2. Then, you must delete its data and configuration files directories.
3. You will also have to delete the configuration files directory for the Scala Transmission Server.
4. Once completed, install the version of Content Manager that matches the version for which you have backup data.
5. At the end of the installation, the installer will automatically open the welcome page in the browser for you.

> ⚠️ **Note:**
> DO NOT configure Content Manager! Instead, close the browser.

Step 2: Stop Apache Tomcat and Transmission Server Services

The installer automatically starts the Apache Tomcat and Scala Transmission Server services, so you must stop them before proceeding with the

restore process.

1. Go to **Start -> Control Panel** then double-click on Administrative Tools.
2. Double-click on **Services**, then find the \`service.
3. Right-click and select **Stop**. Wait for the service to stop completely.
4. Find the **Scala Transmission Server** service. Right-click and select **Stop**. Wait for the service to stop completely before moving to the next step.

Step 3: Restore the Data Files

Restore the data files from the backup location to the data files directory. There should only be one folder, WEB-INF, in the data directory prior to restoring.

Step 4: Restore the Configuration Files

Restore the configuration files from the backup location to the configuration files directory. Some files are automatically created when Apache Tomcat was started by the installer, and must be overwritten when restoring. You must also restore the Transmission Server configuration files. When restoring these files, existing files must be overwritten.

Step 5: Restore the Database

The instructions for restoring your Content Manager database will vary based on the type of database server you are using. Instructions for the following database types are provided individually at the bottom of this page:

- PostgreSQL
- Microsoft SQL Server 2008 R2

Step 6: Start Apache Tomcat and Scala Transmission Server Services

The restore process is now complete. You can start the Apache Tomcat and Scala Transmission Server services.

1. Go to **Start -> Control Panel** then double-click on **Administrative Tools**.
2. Double-click on **Services**, then find the **Apache Tomcat** service. Right-click and select **Start**.
3. Wait for the service to start completely.
4. Find the **Scala Transmission Server** service. Right-click and select Start. Wait for the service to start completely.

You can now access Content Manager.

Restoring Specific Databases

PostgreSQL

As with the backup process, pgAdmin is used to restore the database.

If the database schema you're restoring already exists, you must first delete it. Open pgAdmin by navigating to: **Start -> Programs ->PostgresSQL--> pgAdmin**.

1. Connect to your database server using the same Username and Password you entered when you installed Content Manager.
2. Select the database schema you want to delete, then right-click and select **Delete/Drop**. In the "**Drop Database**?" dialog, click Yes.
3. Select Databases, and then click **Edit -> New Object -> New Database**. Type the database schema name you want to restore. Make sure the encoding is set to **UTF-8**. Click **OK**.
4. You can now restore the tables and data. Select the database, right click, and choose **Restore**. In the resulting dialog box, choose the database backup file that was created. If you backed up the database using specific options, you must change the restore options accordingly. Otherwise the defaults are okay.
5. Wait for the restore process to finish, and verify that the final message is **Process returned exit code 0**. If a different exit code is shown, it indicates that some part of the restore process has failed.

You may choose to use the command line tool pg_restore.exe to restore the database. To restore a backup, execute the following command:

```
pg_restore --dbname=cm --format=custom -U postgres -W C:\tmp\db.backup
```

Please refer to the PostgreSQL manual for more details on the command line tools.

Microsoft SQL Server 2008 R2

If you are using the Microsoft SQL Server 2008 R2 database, you must follow these steps to restore your backup. Like the backup process, restoring the database also uses Microsoft SQL Server Management Studio.

1. Using Microsoft SQL Server Management Studio, delete the existing database you want to restore to. DO NOT delete the backup and restore history information for the database. Start the restore process by right clicking the Databases element.

2. Type the name of the database you want to restore. Select the **From** device radio button and click the **...** button.
3. Add the backup file you want to restore from to the list of backup locations, and click **OK**.
4. Make sure to select the **Restore** checkbox after adding the file.
5. Check the options and execute restore. Scala recommends that the default options remain unchanged.
6. Click the **OK** button to start the restore process. Once complete, verify that the restore was successful.

MongoDB v.3.0.x

To restore a MongoDB instance, the **mongoerstore** command line utility is used. You can specify the database to import via the "-d" options, and you must also require the path to the dump.

Below is an example of an output using this utility.

```
mongorestore -d pam dump/pam/
building a list of collections to restore from dump/pam/ dir
reading metadata file from dump/pam/logDetail.metadata.json
reading metadata file from dump/pam/logReport.metadata.json
restoring pam.logReport from file dump/pam/logReport.bson
reading metadata file from dump/pam/mongoDBPatch.metadata.json
restoring pam.mongoDBPatch from file dump/pam/mongoDBPatch.bson
restoring pam.logDetail from file dump/pam/logDetail.bson
restoring indexes for collection pam.mongoDBPatch from metadata
restoring indexes for collection pam.logReport from metadata
restoring indexes for collection pam.logDetail from metadata
finished restoring pam.mongoDBPatch (2 documents)
finished restoring pam.logReport (6 documents)
finished restoring pam.logDetail (25 documents)
done
```

One done using authentication would look like:

```
mongorestore --host <host> --port <port> -u <username> -p <password> -d <database>
--authenticationDatabase admin dump
```

For more information on using command line utilities, please visit mongorestore 3.0.x

Updating Your Network

> ⓘ **Note:**
> If you already have third-party components that are up to date, please see Updating Content Manager.

Update Eligibility

Software updates are provided under the **Scala Maintenance** program. If your **Scala Maintenance** is current, then you can access all current updates for products you own.

If your Scala Maintenance coverage has ended, you will not have access to any software updates.

For further information related to licenses, software maintenance and software updates you should contact your Scala sales representative. If your Scala Maintenance date has lapsed, you can renew your Scala Maintenance Subscription by contacting your Scala Certified Partner.

Obtaining Current Updates of Scala Software

You can download the latest updates for Scala by visiting http://www.scala.com/updates. You will need your product serial number(s) in order to download any updates.

Most updates are cumulative which means that they include all the changes to the software prior to the version being downloaded. If you have kept your software up to date, then you can apply the newest update without having to apply any in-between updates you may have skipped. Each update comes with a simple and quick installer. In addition, the Player update comes in a form that can be sent by Content Manager to remotely update players.

Supported Upgrade Path

The Scala product team does its best to test and verify all upgrade paths between the oldest currently supported version and the released version being documented here. Our tests cover upgrading from the latest release of a noted version to the current version. As your system configuration may be uniquely customized, this guidance is our advice based on our testing. We hope it provides the most efficient path from your version to this release.

The following versions have been approved for direct upgrade to version 11.03:

- Release 11.00.11
- Release 11.01.04
- Release 11.02.04

Staying on a currently supported version is key to ensuring that your upgrade path is supported as well. If your currently used version is out of support, then we advise you look at the upgrade path for the prior version to this one and work backwards until you find a suitable upgrade path for your needs.

Apply Scala Updates in the Correct Order

> ⚠ **Caution:**
> Updating your Content Manager with new versions is dependent on your having an active Scala Maintenance plan and a corresponding License. Updating your license file with your software update is important.

To ensure proper operation, always update in this sequence:

> ⊙ **Warning:**
> Before updating **Scala Enterprise Content Manager**, make a backup of your database. This will make it easier for you should you need to rollback the update at any point. Check that the backup file is not 0KB in size. If you are using a virtual environment, such as VMWare to run your Content Manager, an image checkpoint or backup, can do the same function as a backup of your database.

1. Update **Scala Enterprise Content Manager** along with any other server software components, *i.e.*:
   - **Scala Broadcast Server**
   - **IAdea Bridge Server**
2. Next, Scala recommends that you update one or more **Scala Players** in your lab-environment or test-environment, and verify satisfactory operation.
3. Then, update your **Scala Players**. They do not have to all be updated at once.
4. Once *all* the **Scala Players** are updated, update **Scala Designer**.

Thus, the "version rule" can be said to be:
Content Manager *newer or equal to* Players
Players *newer or equal to* Designer

Scala version numbers are of the form:

- Release *major*
- Release *major.minor*
- Release *major.minor.hotfix*

In general, the hotfix number can be disregarded when applying the "version rule," unless Scala specifies differently for a given hotfix.

Remote Update of Scala Players

Scala Player Remote Updater

You can use Scala Enterprise Content Manager to send software updates to your Scala Players:

1. Download the desired version of **Scala Player Remote Software Updater** from http://www.scala.com/updates.
2. In **Content Manager**, under **Network**, click **Maintenance Jobs**.
3. Click **New** to create a new maintenance job.
4. If your network also has IAdea media appliances, you will need to select **Scala Player maintenance job** and click **Next**. Otherwise proceed to the next step.
5. On the **Tasks** tab, select the **Install software update** task, click "Select" to upload **Release_version_player_remote_update.zip** file. (**Do not unzip the file first**) or select your Player remote update zip file from the list that will appear. If your network client is run using an account that does <u>not</u> have administrative rights on the player, you will also need fill in the "run as" and "password" fields with the proper credentials. If that is not the case, please leave those two fields blank.
6. Click on the **Scheduling** tab and select a suitable schedule (or 'ASAP').
7. Click on the **Players** tab and select the players you want to update.
8. Save the job.
9. Synchronize those players to apply the update.

Android Player Remote Updater

You can use Scala Enterprise Content Manager to send software updates to your Scala Android Players.

1. Download the desired version of **Scala Player Remote Software Updater** from http://www.scala.com/updates.
2. In **Content Manager**, under **Network**, click **Maintenance Jobs**.
3. Click **New** to create a new maintenance job.
4. Under select Player type and choose **Android**.
5. On the **Tasks** tab, select the **Install APK update** task, click "Select" to upload **Release_version_player_remote_update.zip** file. (**Do not unzip the file first**) or select your Player remote update zip file from the list that will appear.
6. Click on the **Scheduling** tab and select a suitable schedule (or 'ASAP').
7. Click on the **Players** tab and select the players you want to update.
8. Save the job.
9. Synchronize those players to apply the update.

Python Remote Updater for Scala Players

From time to time Scala updates the Python distribution (the current version of Python is 2.7.11.) In addition to an installer that is suitable when you have physical access to the PC, Scala provides a Python Remote Updater for Scala Players. You can also download this from http://www.scala.com/updates and remotely deploy this to Scala Players in the same way as the Scala Player Remote Updater, as discussed above.

Keeping Other Software Up to Date

> ⓘ **Note:**
> Scala has minimum requirements for some of the software components discussed in this section, which can be found on the Verifying Technical Requirements page. Please be aware that the version of these components may change from one release to another, so it is important to check the minimum requirements for every release before upgrading your Scala Enterprise Content Manager.

Windows Update

It is generally a good idea to keep at least reasonably current with Windows Update. That said, from time to time a Microsoft update has introduced undesirable side effects. Your organization may have Windows Update practices and policies to help.

A great many Microsoft security fixes protect PCs when users visit malicious web sites or open malicious documents. As such, a lot of those fixes are not particularly relevant to a properly-hardened Player PC, which does have users driving web browsers or opening arbitrary documents. A more selective approach to updating may be suitable for remotely administered hardened Player PCs.

Scala Enterprise requires Windows 7 Professional or newer.

To see our list of certified Scala PC Players, please click here.

Apache Tomcat

From time to time, the Apache Software Foundation may release updates to Tomcat, to address security issues and/or other issues. The Apache Tomcat security team maintains a web page of security vulnerabilities and the revision in which they are addressed.

If you need to update your Tomcat installation:

1. Back up your Content Manager database, as a precaution. Check that the backup file is not 0KB in size. For detailed instructions on how to back up your database, go to Creating Backups.
   Normally, you will not need to restore from this backup.
2. Uninstall the version of Tomcat you already have installed. If you are asked whether you want to remove all the files in the Apache Tomcat directory, select **No**.
3. Download and install the desired version of Apache Tomcat. For more information on this component and a link to download the certified version of it for use with Release 11.03, please go here.
4. Apply the latest Content Manager updater (even it it had previously been applied.) This is needed in order to regenerate the web application settings for Tomcat, which contain the deployment parameters for Content Manager. It also will ensure that the **Apache Tomcat** Windows service is set to auto-start.

> ⓘ **Note:**
> HTTPS from a proxy server, such as Apache HTTPD or NGINX can now be used without the need to configure SSL within Content Manager or Tomcat. More information can be found on Managing HTTP Connectors in Tomcat.

PostgreSQL

To get more information on this component and download the certified version of it for use with Release 11.03, please go here.

Most Content Manager installations use PostgreSQL as the database.

To check your PostgreSQL version, check your Windows **Start** menu, under **Programs**. You will have an entry reflects your version of **PostgreS QL.**

Starting and Stopping Services

To update your PostgreSQL installation you will have to start and stop certain Windows services as indicated below, using the Windows Services Manager. To access the Services Manager, either:

- right-click on **My Computer** and select **Manage**, then in the left pane select **Services and Applications > Services**
- in your Control Panel, select **Administrative Tools > Services**

From here, you can start and stop services by finding the right service in the list, right-clicking, and selecting **Start** or **Stop**.

Upgrading to PostgreSQL to the current version

1. In the Windows Services Manager, stop the **Apache Tomcat** service.
2. Back up your current database by following the instructions found on the Creating Backups page. Check that the backup file is not 0KB in size.
3. Download the new version of PostgreSQL. For more information on this component and a link to download the certified version of it for use with Release 11.03, please go here.
4. Uninstall any older versions of PostgreSQL.
5. Run the installer you downloaded to install the new version of PostgreSQL. Toward the end of the install, uncheck **Launch Stack Builder at exit**.
6. Restore from the database backup you made above, by following the instructions found in the Restore from Backups page.
7. Start the **Apache Tomcat** service.
8. Login to Content Manager. You may be prompted to reconnect to the database. Select **Test** to test the connection. Select **Next** to complete the operation.

Java

From time to time, Oracle may release updates of Java, to address security issues and/or other issues.

On most systems, Java is configured to automatically update, so no further action should be needed.

To get more information on this component and download the certified version of it for use with Release 11.03, please go here.

> **Caution:**
> When updating to a newer version of Java 8, certain Tomcat parameters need to be adjusted in order for Tomcat to continue to work. You should re-run the Content Manager installer to make sure this has occurred, but in rare cases, such as upgrading Content Manager after a hardware upgrade, these may have to be manually set. In addition, if you have manually set these values in the past, the Installer may overwrite your values as it tries to optimize your system for the Java install. Please take care to record your Tomcat settings before running the Content Manager installer, in case they need to be recovered later.
>
> For guidance on what Scala's recommended settings for Tomcat, please see Checking the Tomcat Java Memory Settings in Advanced Configuration Options for Content Manager.
>
> Because of this, Scala does not recommended that you allow your Java to update automatically, but instead stay aware of Java updates, and install them manually, then do the above step.

MongoDB

MongoDB is necessary for those who wish to use Playback Audit Logging and Reporting.

To get more information on this component and download the certified version of it for use with Release 11.03, please go here.

Re-Indexing Lucerne

Upgrading your version of PostgreSQL may cause the UI to show nothing as listed for your items (Media, Playlists, Channels and Players), the Summary counts on the Home Page may appear to list the correct number of items. This is caused by the Lucerne indexes be out of sync.

This be done by doing the following:

- Go to System and select-> Database Configuration/[Advanced] "Force Re-Indexing on next restart" [Yes]
- Stop and start the Tomcat service. Depending on the capabilities of the server hardware, this process can take up to five minutes per 1000 Players.

Remote Firmware Update of IAdea Media Appliances

From time to time IAdea issues firmware updates for its media appliances. You can also download these from http://www.scala.com/updates. For

simplicity, IAdea provides a single unified file containing the firmware updates for all devices. Remotely deploying the firmware updates is done in a very similar manner to deploying the Scala Player Remote Updater:

1. In **Content Manager**, under **Network**, click **Maintenance Jobs**.
2. Click **New** to create a new maintenance job.
3. If your network also has Scala Players, you will need to select **IAdea maintenance job** and click **Next**. Otherwise proceed to the next step.
4. On the **Tasks** tab, select the **Install software update** task, click "Select" to upload **Release_version_player_remote_update.zip** file. (**Do not unzip the file first**) or select your Player remote update zip file from the list that will appear.
5. Click on the **Scheduling** tab and select 'ASAP'.
6. Click on the **Players** tab and select the players you want to update.
7. Save the job.
8. Synchronize those players to apply the update.

Administrating Access

The underlying pages in this section focus on managing the access to your system. This includes users, their groupings into roles and workgroups, along with alternate user administration through either Active Directory (AD) or Lightweight Directory Access protocol (LDAP). Monitoring your users, managing multiple networks (if you are in a hosted setting) and ensuring your license is up to date are also all considered part of administrating access.

Topics covered in this section include:

- Managing Roles
- Managing Users
- Managing Workgroups
- Managing Authentication and Authorization via LDAP and Active Directory
- Configuring Your Network Settings
- Monitoring User Activity
- Managing Hosted Networks
- Managing Your License

Managing Roles

LDAP can be used as a tool to manage your User and Workgroup permissions. These permissions can either be set in LDAP, or manually in Content Manager, but permissions in both LDAP and Content Manager should be the same.

For a more detailed discussion of LDAP, please click here.

Roles are the method by which Users access Permissions, and they adjust the menu structure so only options that the user can perform are offered. Roles have permissions assigned to them and Users assigned to a role are granted access to the features and items within that associated role's permissions. This page will help you to understand the default roles and how to manage them.

Examining the Default Roles

Content Manager comes with eight default Roles. You can use the system with these default roles, or you may customize your system by creating roles that have combinations of permissions that better fit your usage needs.

The default Roles in Content Manager are:

Role	Main Activities
(Super) Administrator	Manages all aspects of your Content Manager, including sub-networks (in the case of a Multi-Network Content Manager). This role is built-in, and cannot be modified or assigned to a user.
Administrator (System)	Used to manage Content Manager, mostly focused on server administration. Limited to the singular network, or in the case of a multi-network Content Manager, a single sub-network.
Network Manager	Sub-administrator focused on device and network administration.
Message Manager	Approves messages.
Message Editor	Creates and edits messages.
Graphic Designer	Publishes scripts and uploads media.
Schedule Manager	Schedules the distribution of Content.
Viewer	End user focused on viewing and monitoring activity in the system only.

For an explanation of how this documentation addresses the roles in the table above, see the Personas page.

> ⓘ **Note:**
> The Administrator is a protected role that cannot be modified.

Creating a Role

To create a role:

1. Click on **System** at the top of Content Manager, select **Management,** and then select **Roles**.
2. Select **+ New** on the screen that appears.
3. A dialog box that labeled **Create a Role** will appear. Name the role and click **Create.**
4. A screen will appear with a list of Permissions. Choose the appropriate set that you would like for users with this Role.
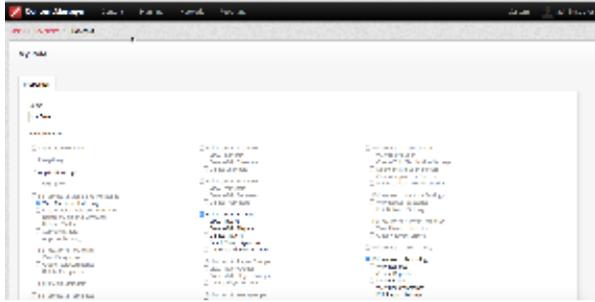
5. Click on either **Save Changes** or **Save and Close** to complete the process.

> ✓ **Tip:**
> It is important that you create Roles before attempting to create or manage Users and their Workgroups.

Editing a Role

1. Click on **System** at the top of Content Manager, select **Management** and then select **Roles**.
2. Select the Role you want to edit, and click **Properties** at the top of the screen.
3. Make your edits, and then click on either **Save Changes** or **Save and Close** to complete the process.

> ✓ **Tip:**
> It is recommended that the predetermined roles are left unaltered and new roles created.

Deleting a Role

1. Click on **System** at the top of Content Manager, select **Management,** and then select **Roles**.
2. Select the Role(s) you want to delete and click **Delete** at the top of the screen.
3. A screen will appear to confirm your deletion, click **Proceed.**

Additional Topics

- Understanding Permissions provides a deeper of explanation of what users are able to do with their Roles in Content Manager.

Understanding Permissions

All Roles have permissions assigned to them to define their access. Content Manager is delivered with default Roles, which come with default permission settings. You can further customize permissions and users to meet your needs. A screenshot of the list of User Role permissions as it appears in Content Manager is attached to this page.

Major User Permissions

These roles provide permission for the entirety of Content Manager

- **Super Administrator**: Access to the entire system and have permissions for all categories, as well as access to areas designated for setup and License Administration.
- **Everything**: Permission to do all the available actions in Content Manager.
- **Application Login:** Used by an application, such as an API, to provide access to Content Manager to complete its task.
- **Third Party:** Provides access to Content Manager from an outside application.

Categories for User Permissions

Edits can be made to User Permissions in the following categories:

⌄ Media and Messages

Users with these permissions will be able to view, create, edit and delete media objects and messages.

Learn more here: Adding Media, Managing Content Approval

⌄ Categories

Users with these permissions will be able to view, create, edit and delete categories.

Learn more here: Managing Categories

⌄ Media Metadata

Users with these permissions will be able to edit media metadata.

Learn more here: Managing Media Metadata

⌄ Templates

Users with these permissions will be able to view, create, edit and delete templates.

Learn more here: Uploading Templates

⌄ Playlists

Users with these permissions will be able to view, create, edit and delete playlists.

Learn more here: Managing Playlists

⌄ Schedules

Users with these permissions will be able to view, create, edit and delete schedules.

Learn more here: Managing Schedules, Using Non-Scheduled Content

⌄ Channels

Users with these permissions will be able to view, create, edit and delete channels.

Learn more here: Managing Channels

⌄ Framesets

Users with these permissions will be able to view, create, edit and delete framesets.

Learn more here: Managing Framesets

⌄ Players

Users with these permissions will be able to view, create, edit and delete players.

Learn more here: Managing Network Devices

⌄ Player Groups

Users with these permissions will be able to view, create, edit and delete player groups.

Learn more here: Managing Player Groups

⌄ Workgroups

Users with these permissions will be able to view, create, edit and delete workgroups.

Learn more here: Managing Workgroups

⌄ Maintenance Jobs

Users with these permissions will be able to view, create, edit and delete maintenance jobs.

Learn more here: Managing Maintenance Jobs

⌄ Player Metadata

Users with these permissions will be able to edit player metadata.

Learn more here: Managing Metadata

⌄ Remote Publish Locations

Users with these permissions will be able to view, create, edit and delete remote publish locations.

Learn more here: Configuring Your Network Settings

⌄ Distribution

Users with these permissions will be able to view, create, edit and delete distribution settings and servers.

Learn more here: Distributing Content

⌄ Network Settings

Users with these permissions will be able to view and edit network settings.

Learn more here: Configuring Your Network Settings

⌄ Network Monitor

Users with these permissions will be able to view and edit network monitors.

Learn more here: Managing Player Health

⌄ User Activity

Users with these permissions will be able to view all user activity

Learn more here: Monitoring User Activity

⌄ Reporting

Users with these permissions will be able to view, create, and delete reports, as well as view and edit report settings.

Learn more here: Using Playback Auditing

⌄ Roles

Users with these permissions will be able to view, create, edit and delete roles.

Learn more here: Managing Roles

⌄ Users

Users with these permissions will be able to view, create, edit and delete users.

Learn more here: Managing Users

⌄ API Documentation

Users with these permissions will be able to view Content Manager's API Documentation.

Learn more here: Interfacing via the API

Permission Categories

- **Full Access To:** Permission to do all things associated with the access for the category as shown underneath, including:
    - **View:** View anything associated with the category.
    - **Create/Edit:** Create or edit anything associated with the category.
    - **Delete:** Delete anything associated with the category.

Some categories of permissions have different options, in addition to or in place of the permissions described here. Below are some additional permissions grouped in their respective areas:

Players

- **Reset Player Signature:** Reassign a Player's license to another Player.
- **Generate Plans:** Make Players create Plans.

Distribution

- **Generate Plans:** Make your server create Plans.
- **Edit Broadcast Media priority:** Set the order in which your media will be played.

Network Monitor

- **View Network Monitor:** See the Network Monitor settings.
- **Clear Network Errors:** Clear any errors listed on the Network screen.

Reporting

In addition to the four categories mentioned previously, Reporting has permissions that can be set for the viewing and editing of Report Settings.

Managing Users

Users are a central part of your system as they are the main contributor to media management and distribution scheduling.

This section covers how the key functions regarding how to administrate your users:

- Creating Users
- Editing Users
- Deleting Users

Creating Users

When you need to create a user in your Content Manager, there are two options:

- Manually
- Via Lightweight Directory Access Protocol (LDAP)

Creating a User Manually

Before creating a user, be sure to first identify or create the new user's Role and Workgroup. Scala recommends setting these up before you start adding users.

There are two ways to get to the correct screen to create users, either by clicking on **Users** on the Dashboard, or by clicking on **System** at the top of Content Manager, selecting **Management** and then selecting **User Profiles**.

1. Select **+ New** on the screen that appears.
2. A box that says **Create a New User** will appear.
3. Fill in the new user's information (username, password, first name, last name, and email)
4. On the right side, choose one of the Roles from the list. (This is required.)
5. Click **Create**.
6. Repeat this process for each new User you need to add.

After selecting **Create**, additional information can be added to assign the Workgroup, Regional Settings and other Miscellaneous Settings. It is not required to make any changes to this additional information, but the opportunity is available. Once you have made any of these additional changes save them by hitting either the **Save Changes** or **Save and Close** button.

> ⓘ **Note:**
> Miscellaneous Settings allow the administrator to inactivate user accounts and control user access and actions around content approvals (workflow), passwords and email notifications.

Creating a User through LDAP

To add users to Content Manager via this method:

1. Press the **Import from LDAP** button on the **User Profiles** page.
2. Select the users to be imported to Content Manager.
3. Click **Add**.

You will receive a confirmation box that says they have been added. This box may also mention that they need a valid role in your LDAP groups.

Editing Users

When you need to edit a user from your Content Manager, there are two options:

- Manually
- Via Lightweight Directory Access Protocol (LDAP)

Manually Editing a Single User

1. Under **System**, in the **Management** column, select **User Profiles.**
2. Check the box next to the user and select **Properties**. Fields that can be edited here include the following user information :
   a. Username
   b. First and Last Name
   c. Email Address
   d. Roles
   e. Workgroup
   f. Regional Settings (display languages)
   g. Miscellaneous Settings.
3. Make your changes, and save them by hitting either the **Save Changes** or **Save and Close** button.

Editing a User through LDAP

To do this, you must first edit the user in LDAP. There is no ability to edit an LDAP user in Content Manager.

Editing a user in LDAP can be done by doing the following:

1. Access the Administration Server and choose the **Users and Groups** tab.
2. Choose the **LDAP directory service** from the Select Directory Service drop-down list, and click **Select**.
3. Click **Edit User**.

Editing Multiple Users

1. Under **System**, in the **Management** column, select **User Profiles.**
2. Select the users you want to edit.
3. Click on **Edit Multiple.**
4. In the screen that appears, click the boxes next to the data you want to edit.
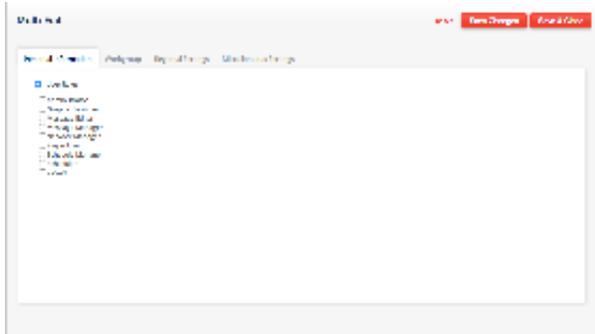
5. Make your changes, and save them by hitting either the **Save Changes** or **Save and Close** button.

> ⓘ **Note:**
> Miscellaneous Settings allows the administrator to inactivate user accounts and control user access and actions around content approvals (workflow), passwords and email notifications.

Deleting Users

When you need to delete a user from your Content Manager, there are two options:

- Manually
- Via Lightweight Directory Access Protocol (LDAP)

Deleting a User or Multiple Users Manually

To remove a user from Content Manager, use the following steps:

1. Under **System**, in the **Management** column, select **User Profiles.**
2. Select the user(s) you want to delete, then click the **Delete** button at the top of the screen.
3. Click "**Proceed**" in the dialog box to confirm and submit your changes.

Deleting a User through LDAP

One of the capabilities of LDAP is the centralized disabling/enabling of user accounts. As part of login, the directory server is consulted to verify user information, including that the account is still active, and the password is correct.

Disabling/deleting the user in LDAP will disable the user from logging into Content Manager.

Managing Workgroups

LDAP can be used as a tool to manage your User and Workgroup permissions. These permissions can either be set in LDAP, or manually in Content Manager, but permissions in both LDAP and Content Manager should be the same.

For a more detailed discussion of LDAP, please click here.

Along with Users and Roles, Workgroups are a simple way to organize your assets for the the users in your Content Manager. A Workgroup is a way of associating one or more objects to a particular collection of other objects. Media, Templates, Messages, and Playlists can be organized into different workgroups. This can be helpful in creating associations between content, playlists and groups of users.

General Workgroup Rules

.
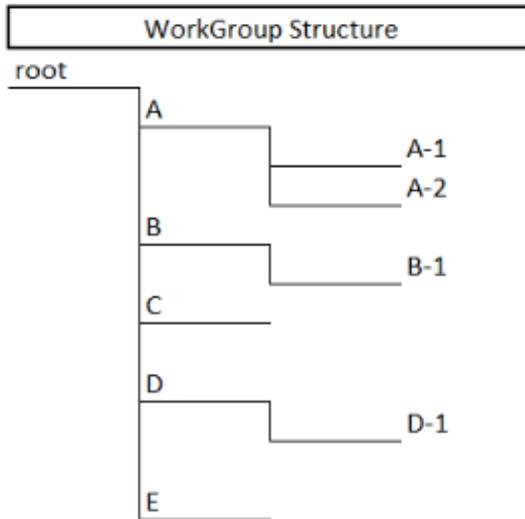
1. As a member of a Workgroup, you can see all Media associated to the workgroup and any Media associated with any Child Workgroups.
2. As a member of a Workgroup, you can see all Media shared with my workgroup, and any Media shared with any Child Workgroups.
3. As a member of a Workgroup, you can see all Media that does not belong to any workgroup.
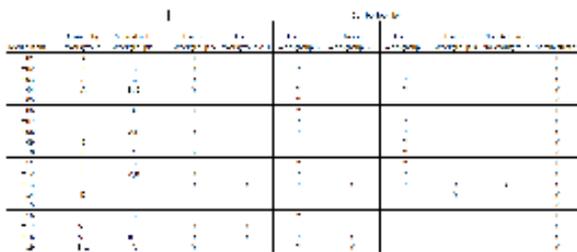

> (i) **Note**
> 1. What you are able to do in a Workgroup will be depending on your Role. For a full discussion of Roles, see Managing Roles.
> 2. Media items that are shared with your Workgroup, are only able to viewed and therefore can not be edited.
> 3. It is helpful to create a workgroup based on how people work together, or how assets are used together. Approaches include: teams, departments, divisions, campaigns, styles, or target audience. It is valuable to select names that clearly identify the purpose of the workgroup.

Finding an Existing Workgroup

If Workgroups have already been created they will appear in a "tree structure," which can be expanded/collapsed at each node.
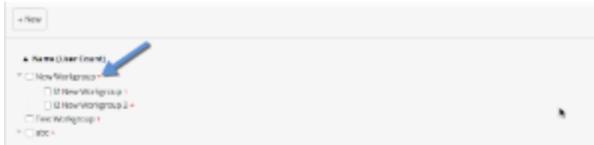
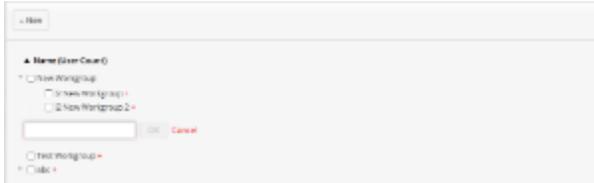Click on the image for a larger version.
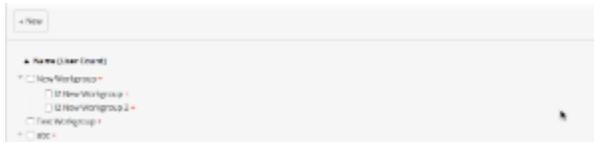
Creating a Workgroup

To create your first workgroup, go to **System** > **Management** > **Workgroups** and select **New** at the top of the panel.

If you want to create sub-workgroups select the **+** (which is highlighted in the first image below) at the end of the name of the workgroup.

Fill in the blank field that appears as seen in image below.

Define the name of the Workgroup in the presented field and click **OK**.

> (i) **Note:**
> Items created by a user within a particular workgroup inherit the user's workgroup. If the user is not assigned to a workgroup, the item
> defaults to being classified as having "no workgroup" and is visible to all users in all workgroups. Items can be reassigned manually but
> it is easier if you already have workgroups created. If a user does not have a Workgroup, he can see all of the content on the network.

Editing a Workgroup

1. Select **System** under **Management** select **User Profiles.**
2. Select the workgroup you want to edit
3. Make your desired changes and click **Save**.

Deleting a Workgroup

1. Select **System** under **Management** select **User Profiles.**
2. Select the workgroup you want to delete, and click on the delete button at the top of the page.
3. Click "Proceed" in the dialog box to confirm and submit your changes.

Workgroups and Playlists

Adding a Workgroup to a Playlist

There are three ways in which a workgroup can be added to a playlist:

1. **User assigned to a workgroup**: *G*enerally, unless a Super administrator, a user cannot change the "owner workgroup" of a playlist.
   When the user creates a playlist, it is automatically assigned to the user's workgroup. The user cannot see or modify playlists belonging
   to in another workgroup unless they have been shared with their workgroup.
2. **User not assigned to a workgroup**: Generally, unless a Super administrator, a user cannot change the "owner workgroup" of a playlist.
   When the user creates a playlist, it is not assigned to a workgroup by default. The user can only see and modify playlists that do not
   belong to any workgroup.
3. **Super administrator:** Can assign the "owner workgroup" of a playlist. If the Super Administrator creates a playlist, it is not assigned to a
   workgroup by default. The super admin can modify all playlists.

Sharing a Playlist with Other Workgroups (View Workgroup)

This is achieved by selecting, in the Playlist properties, the workgroup(s) with which you want to share the playlist. However, the following should
be noted for playlists that are shared:

1. Sharing a playlist means that members of those workgroups, provided they have the appropriate role, can now see the playlist.
2. The list of media items that can be added to the shared playlist is limited to those media items that are also owned by and shared with the
   associated workgroups of the playlist.

Example: A playlist is owned by Workgroup A that is share with Workgroup B and Workgroup C. The media list available for adding to the playlist
is reduced to those media items that have ALL three workgroups (media items owned by Workgroup A and shared with Workgroup B and
Workgroup C; media items owned by Workgroup B and and shared with Workgroup A and Workgroup C; media items owned by Workgroup C
and shared with Workgroup A and Workgroup B) or media items with no workgroup.

Modifying Workgroup Assignments

Any items that were previously added to a playlist that do not match these rules displays a triangle alert icon, and a message that indicates that
the item is from a workgroup that is not allowed. Changing workgroup assignment (both owned by a workgroup or shared with a workgroup) will
not automatically remove items from a playlist.

Filtering by Workgroup

Filtering playlists by workgroup is based on the "owner workgroup" of the playlist.

Managing Authentication and Authorization via LDAP and Active Directory

Content Manager integrates with Microsoft's Active Directory (AD) or LDAP servers for user-authentication (verification of username/password) and user-authorization (roles and workgroups) from the central directory servers. When the user tries to log in, the directory server is consulted to verify some information about the user, including that the account is still active, that the password is correct, and optionally what the user's role(s) and workgroups are.

The use of LDAP and Active Directory allows for such capabilities as:

- Centralized password management.
- Centralized enforcement of password rules (e.g., minimum password complexity, mandatory password change every 30 days, etc.).
- Centralized disabling/enabling of user accounts.
- Centralized management of roles and workgroups.
- Importing of existing users from the central directory server.

> ⚠ **Caution:**
> If you choose to use LDAP to manage your security, you must make changes to your Roles, Users and Workgroups in LDAP, not in Content Manager.

Configuring an Active Directory/LDAP Connection

You can configure a connection to the Active Directory or LDAP server using either LDAP, or LDAPS (which is LDAP encrypted over SSL) by specifying the:

- LDAP Host URL and Connection Distinguished Name (DN) and password (credentials) with which to connect. This can include an optional port number (i.e. **ldap://server:portnum** or **ldaps://server:portnum**)
- Base DN, which is the place within the directory services structure under which the users of interest live.

If you have a large list of users (anything over 100 users) you are trying to import, it is a good idea to use search criteria. This will allow you to be more efficient with the import, as it easier to insert only the user you actually want to import into Content Manager.

- When importing users from LDAP, do not use usernames with spaces in them, as this will cause a login failure in Content Manager.

Connection Types

Content Manager supports an authenticated connection to the directory server, by specifying the **Connection DN** and **Connection password**. An anonymous connection to the directory server is supported by leaving these fields blank.

Multiple Domain Trees/Multiple Forests

The configuration user interface lets the administrator specify the Base DN (distinguished name) under which all the users are to be found. Content Manager does not support multiple domain trees within a single forest, or multiple forests. (There are proxying products that can represent multiple such trees as one.)

Connection Testing

The **Test Connection** button verifies that all the connection information works and that the directory server is reachable.

Mapping

The user's workgroup and role from within the LDAP/Active Directory server is achieved by making your Active Directory users members of carefully-named Active Directory groups (or by making your LDAP users have carefully-named LDAP attributes.) Those users become members of the matching named Content Manager workgroups and roles. Proper planning will ensure that you have correctly mapped the user before importing them into Content Manager.

- **Permissions attribute**: Name of the LDAP attribute to check, for role and workgroup membership. For Active Directory, use memberOf.
- **Role permissions prefix**: Prefix of the LDAP attribute or Active Directory group corresponding to a Scala role. For example, if the Role prefix is "ScalaRole_", then a user who is a member of the Active Directory group "ScalaRole_Graphic Designer" would have the Content Manager role "Graphic Designer", etc. A user can have one or more roles.
- **Workgroup permissions prefix**: Prefix of the LDAP attribute or Active Directory group corresponding to a Scala workgroup. For example, to use ScalaExton as a workgroup (which is a sub-workgroup of "Scala") define the workgroup in the LDAP Server as "ScalaWorkgroup_Scala_ScalaExton (where ScalaWorkgroup is a prefix). A user can have one workgroup.

> (i) **Note:**
> Both the Role and Workgroup names used need to be defined in Content Manager for the mapping to be successful. It is not required to use LDAP attributes to do either of these. It should also be noted that workgroup and role mapping is optional.

User Lookup Testing

The **Test Lookup** button lets the administrator enter a sample username and password, and verify that this user can be found and authenticated using the directory server.

Configuring Your Network Settings

To access the tabs listed below:

1. Go to the **System** menu, and select **Administration**.
2. Once there, choose **Network Settings**.

Once there, you will be able to make changes to the settings in the following tabs:

Approval Settings Tab

As an admin, you can configure the system to enable and require the approval workflow for messages and/or media items. If enabled, the users of your system can then manage content approval.

You can separately enable this workflow for either Media Items or Messages. For each:

- If **Yes** is selected, content approval is requested before content is shown on a player.
- If **No** is selected, no approval is requested or checked.

Miscellaneous Settings Tab

The following settings can be adjusted on this tab:

- **User Password Expires in Days:** Number of days remaining before the user will have to reset their password. The default is set by the Administrator.
- **Session Timeout**: Content Manager will automatically log you after after a certain period of time (in minutes) of idleness or inactivity.
- **Max Threads**: Allows you to set the maximum number of download threads from Remote Publish Locations that your Content manager will run.
- **Purge Plan Generation History After (in days)**: Number of days after which your plan generation history will be removed from your database. The default is 14 days. Please be aware that items will take up to +1 day to show in your history when making a change to the number of days.
- **Enable Dashboard News Feeds**: Enable or disable news feeds.
- **Enable Playback Audit Reporting**: Enable or disable reporting. Playback Audit is important for users that choose to create reports about how often content is played on a given player. If you do not need this information, there is no need to enable it. However, you should be aware that enabling the setting causes Content Manager to consume more system resources.
- **Max database age (days):** Sets the number of days your report database will be kept. The default is 90 days, but can be set to a time period length of your choice.
- **Calculate Playlist Duration Automatically:** Enable of disable the automatic calculation of playlist duration.
- **Thumbnail Generation for Messages**: Set to Auto or Manual how you want thumbnails to be rendered for new or updated messages.

Player Authentication

In this section, you can change the username and password for the Players accessing your Content Manager. The default password is **ChangeThePassword.**

> (!) **Warning:**
> If a Player is connected to a Content Manager, modifying the existing username or password may cause a loss in communication between the two. If a change is made, please ensure the same change(s) are made for the credentials on the player also.

Mail Server Settings

This is the screen to enable or disable the SMTP server that will allow you to send email to users (example: content approval notifications). Player emails are also generated via this setting. The settings include:

- **SMTP Server Address:** IP address or machine name of the SMTP server you want to use.
- **SMTP Server Port: P**ort of the SMTP server. The default value is twenty-five (25).
- **Use SSL:** Set to **yes** if your the mail server requires the use of SSL.
- **Email Sender Address:** Email address that will appear in the From line of the email.
- **SMTP Username**: If the mail server requires authentication, enter the username.
- **SMTP Password**: If the mail server requires authentication, enter the password for the account.
- **Confirm Password:** Requires you to re-enter a password for confirmation.

Monitoring User Activity

If you want to see what users are doing within your Content Manager, user activity is logged and presented in the User Activity screen.

Selecting **User Activity** from the **System** menu shows a list of user interaction events with the following details:

- **Username:** User login that performed the listed event.
- **Type:** Action performed (e.g. users added, account updates, etc. A more thorough explanation follows below.)
- **Time**: Timestamp of the event (listed in your local time).
- **Details:**
  - **Activity:** Data affected by event (e.g, name of workgroup deleted).
  - **IP:** Address form where event was performed.
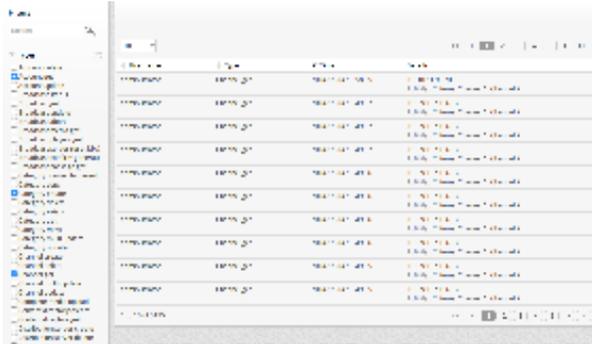
Event Types

The selections that appear on the left hand side column allow you to filter the list on the right hand pane by clicking the check box(es) for the event type(s) you are trying to monitor.

Types include:

Type Object	Type Action(s)
Account	Delete, get, update
Broadcast	Status, get, update, abort
Broadcast media	Get
Broadcast players	Get
Broadcast server	Reset MAC
Broadcast confirm	Generate plan
Broadcast package	Get
Category	Convert to parent, copy, create, delete, exists, get, move, multi update, update
Channel	Create, delete, get, multi update, update
Complete media upload	
Content directory	Create, get
Distribution server	Create, delete, get, move, multi update, status, update, generate plan
Distributed media	Get
Distribution server	get plans, task state get
IAdea server count	Get
Event trigger	Get
Failed login	
Frameset	Create, delete, get, move, update

Update smart playlist	
Generate thumbnail	
Language	Get
Users imported from LDAP to CM	
List of Users on LDAP server	
Test LDAP connection	
License	Get, installed, upload, download
Online License	Downloaded
Maintenance file	Create, delete, get, multi update, update
Media	Create, delete, get, update, multi update, info
Media metadata	Create, delete, get, move, update
Media revision	update
Message	Create, delete, get, update, multi update
Non scheduled content	Get
Personal settings	Update
Player clear	Errors
Player	Create, delete, get, get licenses, get version, get versions, state, update
Player Log	Request, get
Player group	Create, delete, get
Player health	Clear problems, get all problems, get network activity
Player metadata	delete, get
Create multiple players	
Player state	
Reset player MAC	
Generate new paring key	
Get player plan	
Generate plan for player	
Playlist	Create, delete, get, multi update, thumbnails, update
Playlist item	Create, delete
Publish location	Create, delete, get, get logs, multi update
Re-update smart playlist	
Report	Create, delete, generate, get
Report Settings	Get, update
Request media upload	
Role	Create, delete, get
Schedule update	
Delete connector	
Download logs	

Find LDAP user	
List connectors	
Save LDAP setting	
Server time	
Test LDAP connection	
Update	Client connection, connector
Plan Generation mode	mod
Template	Create, delete, get, multi update, update
Timeslot	Create, delete, get, update
Time trigger	Get
Transition	Get
Upload applet	Login
User activity	Get, show chart
User	Create, delete, get, list
Web login	
Web Login	LDAP
Workgroup	Create, delete, exists, get, multi update, update
WS login	
Reset password for super administrator	
Password changed	
Ignore Problems	Get
Player Health settings	Get, update

Managing Hosted Networks

If you purchased a Multi-Network Content Manager, you are able to access your multiple Hosted Networks from a single sign-on.

Switching Between Hosted Networks

To move between your multiple networks:

1. Click on your **username**, which is located at the far right of the top menu.
2. In the menu that appears, click on **Switch Network**.
3. Choose a network from the drop down menu that appears.

Editing Hosted Networks

To edit one of your Hosted Networks:

1. Go to the **System** menu, choose **Hosted Networks**.
2. On the list that appears, choose the network you want to edit, and click **Properties**. Networks can be sorted by name in ascending (A to Z) or descending (Z to A) order.
3. On the screen that appears, you will be able to make edits within two tabs:
    a. **Network Properties**: Add a description of the network or toggle the network between active and inactive
    b. **Users**: This is normally visible ONLY to the Administrator (System) role. To add users, this user should create a user in the Administrator role in the **User Profile** section. The option must also be added to the features.xml file as well.

Adding Hosted Networks

This is done through your Scala License.

Deleting Hosted Networks

To remove one of your Hosted Networks:

1. Go to the **System** menu and choose **Hosted Networks**.
2. On the list that appears, choose the network(s) you want to remove, and click **Delete.** You will see a message similar to the one below, which warns of the potential consequences of removing the network. If you do want to remove the network, click **Proceed.**

Managing Your License

This status screen provides detailed License information related to your Scala Enterprise Content Manager including the serial number, Scala Maintenance coverage date and playback device entitlement. This information can be accessed by selecting **License Status** on the **Administrati on** section of the **System** drop-down menu. You are able to manage the license in Content Manager when logged in using the built-in Administrator account.
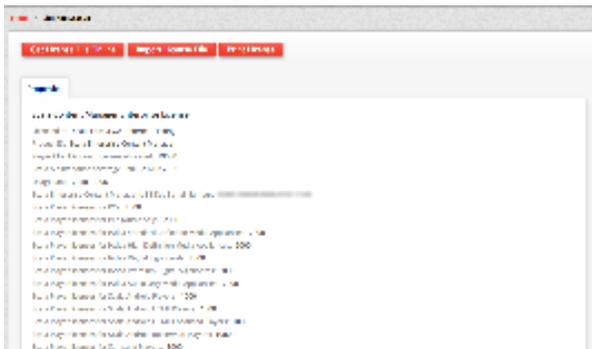
Whenever you add additional playback devices, additional modules, or renew Scala Maintenance, your license will need updating before any changes take effect.

From this screen, there are two ways to update your license file:

- **Get License File Online:** Content Manager will retrieve your latest License from the Scala license server over the internet directly.
- **Import License File:** If you have downloaded your License file from the Scala license server manually, this option will allow you to import that file.

> ⚠ **Caution:**
> Updating your Content Manager with new versions is dependent on your having an active Scala Maintenance plan and a corresponding License. If you force an update to your system to a version that your current license file does not allow, it will have negative affects on your environment. Updating your license file with your software update is important. For more details, view the page about Updating Your Network.

Additionally, there is an option to print a hard copy of the license for your paper based records if needed. This can be done by clicking on the **Prin t License** button.

Release and Update Notes

Scala is constantly working to improve the customer experience by providing updates on a regular basis. These updates reflect current security trends and resolutions to issues that have been reported by our customer base. The list of releases can be found below, with the most recent version always being at the top of the list. Click the release version label in the listing box below to review the summary of changes you are interested in. Each summary release listing highlights the most notable items for that release.

These cumulative updates are only available to customers under Scala Maintenance. If your Scala Maintenance date has lapsed, you can renew your Scala Maintenance Subscription by contacting your Scala Certified Partner. If you are need further assistance, our Scala sales team will be happy to help.

For full details on making updates to your system, including determining update eligibility, obtaining current updates, and adhering to current guidelines, go to Updating Your Network.

Versions Within This Page

- Release 11.03 - April 6, 2017

Related Areas

- Scala Enterprise Homepage
- Scala Enterprise Update Notes
- Designer 11.03 Release and Update Notes
- Player 11.03 Release and Update Notes

ⓘ **Note:**
The label "Notable" means that more information can be found on the Notable for Support page.

Release 11.03 - April 6, 2017

New Features

- Scala Enterprise 11.03 now supports a number of feature based licenses. Please see the Feature License Functionality Matrix for more information   [...]
  Added an alternate options feature to frames and timeslots to set the default behavior when the current playlist has no items to play. The options are: Black, Transparent or Playlist.   [...]
- To assist troubleshooting, Content Manager now has the following new log files: ContentManager-useraction.log, ContentManager-performance.log and ContentManager-plangeneration.log, which log Content Manager information into separate log files.   [...]
- Added a configuration option under Network>Miscellaneous Settings that will allow the user to configure if the thumbnail is generated automatically during message creation. It is defaulted to Auto.   [...]
- Playback Audit can now use dynamic polling to increase the efficiency of parsing billing files. To enable this feature and change the default behavior from static mode (poll every second), set "pam.staticPollingMode=false" in config.properties and restart Tomcat.
  [...]
- Added a configuration to the UI in Network Settings to turn automatic playlist duration calculation on or off.   [...]
- To speed up the process for the initial ingestion of files, Media uploads now allow for the selection of an item's folder location, workgroup categories and metadata.   [...]
- Added a link to Player Inventory and Player Health from the Player Landing page.   [...]
- Playlist media items can now have Channel.name and player.channel now display as condition types.   [...]
- Microsoft SQL Server 2014 is now certified for use with Scala Enterprise.
- New Feature--To prevent a black flash prior to playing a webclip, you can now set the background color as a hexadecimal number for a webpage or widget in the properties page.   [...]

API

- Added POST logout REST web service that requires the apiToken request header to properly remove the associated user from the session.   [...]
- Added the "updateParentHealth" query parameter to several playlist API's to control updating the health status of all owning playlists for a given sub-playlist.   [...]
- General API improvements.   [...]

Playback Audit

- Updated the Playback Audit Parser to use the Message Name, rather than the Template Name in the billing log.   [...]
- Playback Audit Reports have been updated so the URL will be displayed for Web Page media items.   [...]

Publish Locations

- Fixed a cleanup issue relating to Publish Locations.   [...]
- Fixed an issue with connecting to remote UNC publish locations.   [...]

Bug Fixes

- Fixed an issue where messages, created from templates and containing picklists and radio buttons, did not play the correct choice.
  [...]

  ⓘ **Note:**
  Requires both Content Manager and Player to updated to 11.03).

- Fixed a bug relating to the assignment of "message approver" and "media approver" permission to the Super Administrator role.
  [...]
- Fixed an issue where maintenance jobs did not update when player groups were updated or deleted.   [...]
- Fixed a bug that prevented Content Manager from connecting to a database scheme configured with an upper cased name.   [...]
- Fixed a rare issue that caused the thumbnail generating process to time out.   [...]
- A newly created frame will use "fit inside frame" as the default auto scale setting.   [...]

- Fixed an issue where Event Triggers are not deleted when their Trigger Variables have been deleted in a Channel update, causing an error in the Channel landing page.
- Fixed issues when uploading the same set of multiple files to multiple sub-networks via the File Uploader or via drag and drop.
- Fixed a case during plan generation, of mixed player types, where still images created as part of a message were not included in a plan correctly.

Other

- The Scala Advantage date for Release 11.03 is **March 1, 2017**.
- The user can no longer set the duration in a Playlist for the Transition "cut."
- Pressing Enter multiple times no longer accidentally creates multiple records.
- If you are running a Media report with page level events, you will now see the following message if there are none: "there are no page events for this media item."
- Added a new UI field that allows the user to set the value of the "sf_is_charted" field when creating or updating a playlist. Currently, playlist set to be controlled by third part apps, this status will not be updated when changes are made to the playlist.
- Updated the Playback Audit Parser to retry parsing when database connectivity related failures occur.
- Re-published templates will maintain the preferences set for them in Content Manager.
- Content Manager now displays an error message when it is unable to connect to the License Server.
- Removed the limit of the number of categories per network.
- Self extracting ZIP files can now be transferred to the Player via an "Install File" Maintenance Job.
- Added additional logging statements to record emulate transmission server failures and retries, which can be found in the ContentManager.log file.
- Approval emails will not be sent to disabled users.
- General performance improvements.
- General cosmetic and usability improvements.

Third Party Requirements

This page provides links to the version of our third-party components that have been certified to use with this version of Content Manager.

- Java 8
- Tomcat 7
- PostgreSQL 9.3
- Playback Audit Database Assistant
- MongoDB 3
- Microsoft Hotfix to Improve MongoDB Performance
- Microsoft DirectX Software Rasterizer

Java 8

Scala Enterprise Content Manager requires the Java 8 runtime from Oracle, version 1.8.0.73 or better.

Click to visit the Java download site, then download and install the **64-bit Windows Offline** version of Java.

> ⓘ **Important Note:**
> Before updating Java, please familiarize yourself with Updating your Network.

Tomcat 7

Scala Enterprise Content Manager requires the Apache Tomcat 7 web server, version 7.0.70 or better.

Click this direct link to download that version, or visit the Apache Tomcat download site.

> ⓘ **Important Note:**
> Before updating Apache Tomcat, please familiarize yourself with Updating Your Network.

PostgreSQL 9.3

Scala Enterprise Content Manager requires the PostgreSQL database, version 9.3.5 or better.

Click to visit the PostgreSQL for Windows download site, then download and install the **Windows x86-64** version of PostgreSQL.

> ⓘ **Important Note:**
> Before updating PostgreSQL, please familiarize yourself with Updating Your Network.

Playback Audit Database Assistant

If you are using its playback audit logging and reporting, Scala Enterprise Content Manager requires the use of MongoDB database, version 3.0.12 or better.

Scala provides the **Playback Audit Database Assistant Installer** that handles installing and configuring MongoDB as well as related housekeeping. You should use this assistant, instead of directly installing or upgrading MongoDB. Visit the Scala Download Center and provide your Content Manager serial number in order to download the Playback Audit Database Assistant.

The Playback Audit Database Assistant will require that you download the MongoDB installer. Click for instructions on how to do that.

> ⓘ **Important Note:**
> Before updating MongoDB, please familiarize yourself with Updating Your Network.

MongoDB 3

If you are using its playback audit logging and reporting, Scala Enterprise Content Manager requires the use of MongoDB database, version 3.0.12 or better.

Click this direct link to download that version, or visit the MongoDB download site, then download and install the appropriate version.

> ⓘ **Important Note:**
> Before updating MongoDB, please familiarize yourself with Updating Your Network.

Microsoft Hotfix to Improve MongoDB Performance

When run under Windows 7, or under Windows Server 2008 R2, MongoDB performance is improved when the Microsoft hotfix KB2731284 is installed. (Newer versions of Microsoft Windows incorporate this fix automatically.)

(If you are using its playback audit logging and reporting, Scala Enterprise Content Manager requires the MongoDB database.)

Click for the KB2731284 article on the Microsoft support site, then:

- Click **Hotfix Download Available.**
- Accept the Microsoft Terms and Conditions.
- Fill out the form.
- Click **Request Hotfix.**
- Install the hotfix according to its instructions.

Microsoft DirectX Software Rasterizer

Scala Enterprise Content Manager requires the Microsoft DirectX Software Rasterizer.

To install this component, please re-run the product installer using the Content Manager installation disc. If you do not have a disc, please contact Scala Support.