UNLEASING THE POWER OF THE ROCK CMS

Welcome

Rock RMS was conceived and built by web designers and programmers just like you. We understand that you might be a little hesitant about using Rock as your Content Management System (CMS). In fact, many of you are probably thinking that you won't use Rock as a CMS at all. Instead, you're considering integrating it to your current CMS using our REST API. We don't blame you. We thought the same thing years ago when we developed our first relationship management system. But we were wrong. Hopefully, you'll read this entire guide. If you do, we think you'll see the light too. But let's be honest right up front and address some of your top concerns.

Your Top Five Concerns with Using Rock as a CMS

1. **Rock will never have all the features of my current CMS.**
   Yep, you're right. We'll never be able to have every feature that your current CMS has. Although, they probably don't have every feature we have either. Rock makes creating powerful websites easy. We've ~~stolen~~ borrowed the best ideas from the top CMS out there. We've leveraged our years of experience building sites to create tools we've always wanted.
2. **We'll never be able to find someone who knows Rock; everyone knows xxxxx.**
   We're working hard to establish an ecosystem full of vendors and freelancers who can help you. Not only that, but documentation like this manual makes it simple to quickly bring any web designer vendor up to speed. You should probably hesitate to use any vendor who resists using the tool the customer wants and instead uses their favorite tool. Remember, you're the one who needs to live with the site.
3. **Rock is built on Microsoft .Net. Come on, no serious CMS uses that.**
   While there are several popular .Net CMS systems (Umbraco, DotNetNuke, Orchard) that really isn't the point. When looking for a CMS, you need powerful features with blazingly fast performance that can scale. Rock excels at each of these. Think about it this way: Should the builder be judged by the tools he brings to the worksite or the building that stands when he's finished? That's not to say we're not proud of our tools. We LOVE .Net and we think you will too once you try it on.
4. **There are a limited number of .Net webhosts to run Rock on and the ones that do exist are more expensive.**
   True, there are fewer than our PHP/MySql cousins, but there are numerous vendors to pick from. As far as price, .Net hosting on average costs about 20% more than Linux hosting. On the lower end this translates into $2-$3 dollars a month. The return on investment with using Rock as your CMS will far outweigh this small difference.
5. **But I'm a PHP developer; I don't know .Net.**
   That's just a part of the job. Constant change is the career you've chosen. Technologies like LESS, jQuery and Bootstrap didn't exist just a few years ago. To not change is to become extinct. Don't see yourself as a .Net Developer, instead look at yourself as just a developer who today uses .Net. If you're a developer, you'll have no trouble with .Net. It's an elegant and well-designed language.

But What Are the Benefits?

Hopefully you're starting to see that some of the barriers aren't as large as they may appear. But there's no reason to change for change's sake; the benefits must outweigh the cost. Reading through this manual will show you numerous ways to exploit the power of Rock's CMS features. But let's touch on one simple example. The biggest "killer app" of Rock is personalization. Just picture adding the markup below into your baptism page using Rock's on-page HTML editor (You're going to love the editor!):

```
{% if Person %}
    {% if Person.BaptismDate != '' %}
        {{ Person.NickName }}, remember the joy of your baptism? Share that joy
        with a friend who hasn't yet taken the plunge at one of our upcoming
        baptism events!
    {% else %}
        {{ Person.NickName }}, now is the time! Don't put off baptism any longer,
        take the plunge at one of our upcoming events!
    {% endif %}
{% else %}
    Take the plunge at one of our upcoming baptism events!
{% endif %}
```

Rock uses an upcoming templating engine called Lava. Paired with Rock data, Lava is very powerful. The markup above does this:

- If the person is logged in and has been baptized it shows the message: "Alisha, remember the joy of your baptism? Share that joy with a friend who hasn't yet taken the plunge at one of our upcoming baptism events!"
- If the person hasn't been baptized yet they'll see: "Alisha, now is the time! Don't put off baptism any longer, take the plunge at one of our upcoming events!"
- Otherwise, if the person isn't logged in, the greeting reads: "Take the plunge at one of our upcoming baptism events!"

Armed with just a little knowledge of Lava, we've created a very personal experience on our site; one that is much more likely to draw people in and promote action. Are you starting to see the power of Rock? And we're just getting started.

Anatomy of Rock CMS

Grab your lab partner and let's dig in to what makes the Rock CMS tick. There's no better place than to start at the top with sites and work our way down to the components that make up a page. Pass the scalpel and let's start cutting.

Sites

The top of the CMS hierarchy is the site. Each website you create should be created as a unique site. Think of sites as a collection of related pages that share a consistent look and feel. Sites aren't limited to external websites though. You can use them to contain your check-in pages or a set of pages for a metrics dashboard.

Sites are created and managed under `Admin Tools > CMS Configuration > Sites`. Be sure to use the chapter Creating a New Site before setting out on your own.

Site Themes

Themes are a set of resources that add styling to the pages of a site. The theme is defined at the site level. This makes it very easy to change the look of an entire site with a single configuration change. You can read more about themes in the Themes chapter.

Pages

The concept of pages is pretty obvious; they represent a single web page. Unlike many CMS however, the page doesn't exist as a file on the website. Instead, a page is dynamically assembled by Rock with each request. This allows each page to be personalized by the person requesting it and allows you to secure portions of the page based on the person's security rights.

Pages are arranged in a parent-child hierarchy. This hierarchy allows us to build dynamic menus.

Layouts

Each page is configured to have a specific layout. This determines the content areas (or zones)

that the page has. Available layouts are defined by the theme that the site is configured to use. While you can create as many new layouts as you'd like, we strongly recommend that you use the standard names for reasons that will be made obvious in future chapters.

Zones

Zones are content areas that are defined by the layout. They represent things like the header, navigation menu, footer and content areas.

Blocks

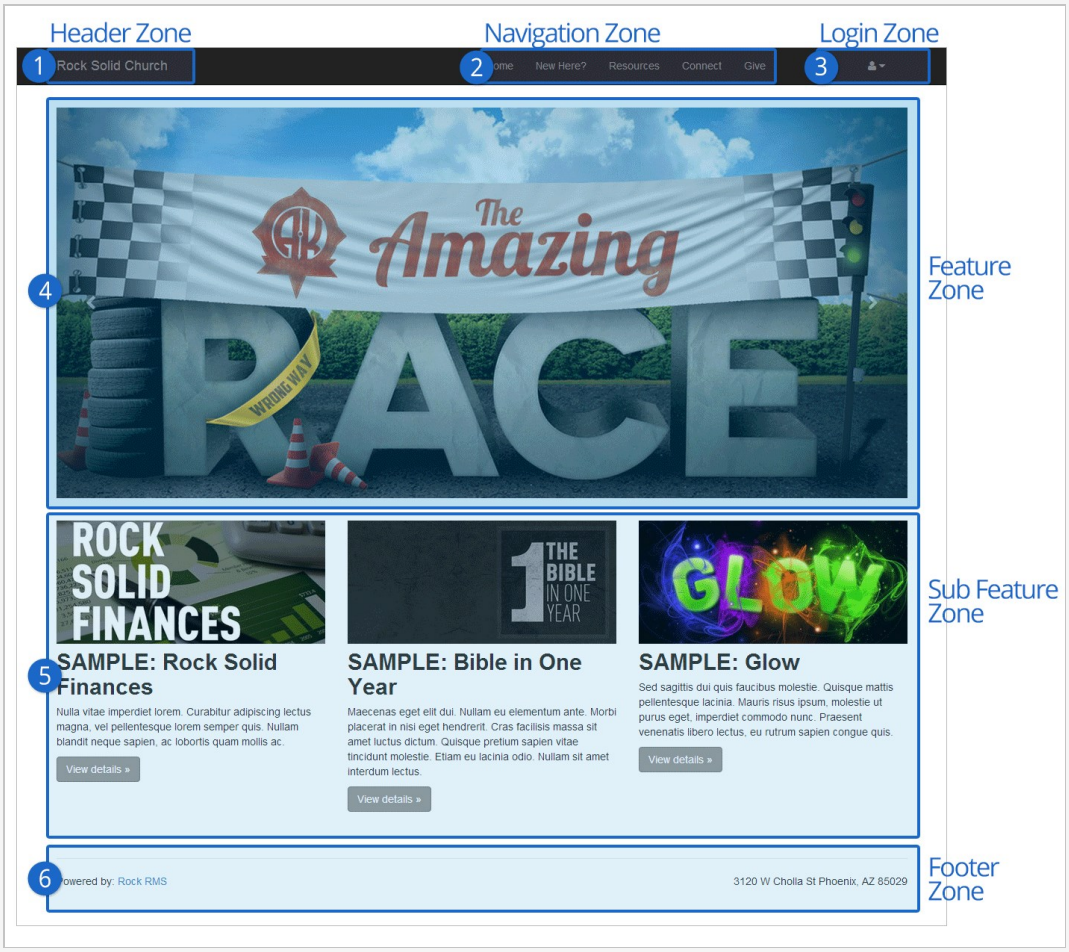
Blocks make up the actual content of the page. They come in all shapes and sizes. Each has a specific purpose. The most common block is the *HTML Content* block. This block allows you to display and edit HTML content to a specific zone. Other blocks are used to generate navigation menus, list groups, show maps, etc. Think of blocks as your Legos® that you can use to build a world of new inventions.

Blocks can be placed on either a page or a layout. When tied to a layout they're displayed on every page that uses the layout. This is very helpful when adding content like navigation in the header or footer text that should be the same across all pages.

The Anatomy of a Page

Now that we've covered all of the components of the Rock CMS system let's look at a visual representation of a page.

Anatomy of a Page



1. **Header Zone**
   The header zone is used for the organization's logo and tagline.
2. **Navigation Zone**
   The navigation zone holds the site's main menu.
3. **Login Zone**
   The login zone allows people with accounts to access protected portions of the site.
4. **Feature Zone**
   The feature zone holds the main content of a homepage which in many cases will be an ad rotator.
5. **Sub Feature Zone**
   The sub feature zone contains secondary ads or content on the homepage.
6. **Footer Zone**
   The footer zone wraps links and content in the footer.

Adding Content to Rock

As you work on your site, you'll want to add new pages. There are two ways to do this: through your external organization site, or through your internal Rock site. Both methods end in the same result (new pages with blocks and content), you just take different paths to get there. Each approach has its pros and cons. Creating pages from your external site allows you to view the pages as you're creating them. Creating pages from your internal site allows you to create and configure pages faster as well as to easily see how the new pages fit into the overall site structure.

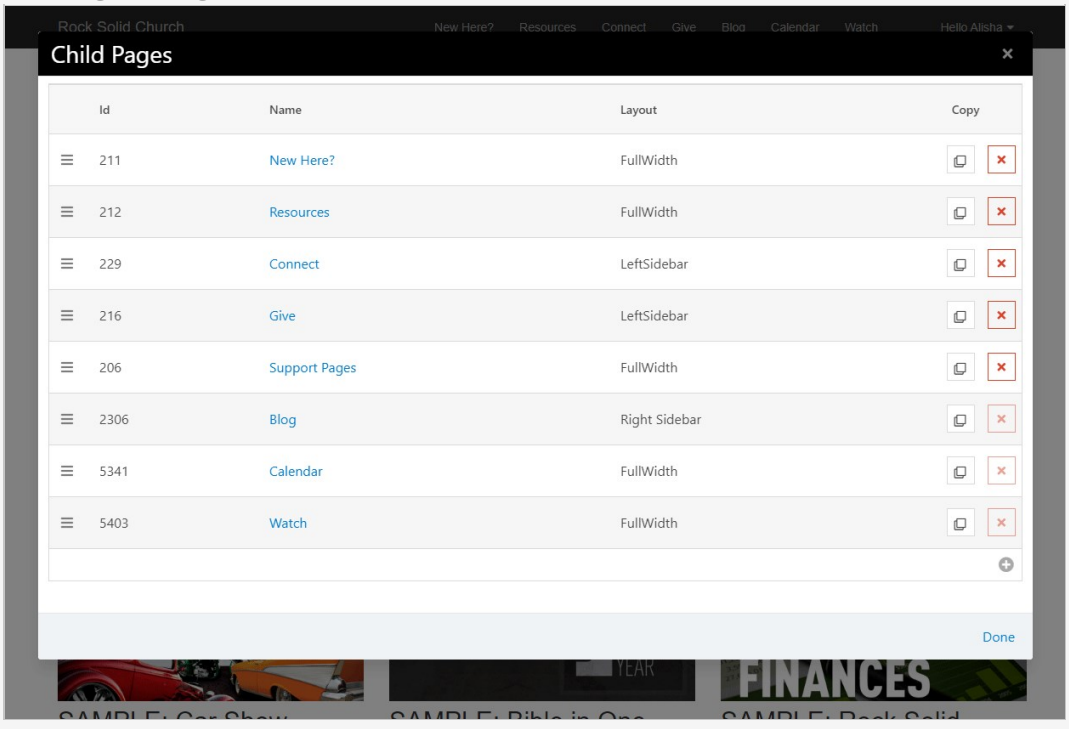
Let's start by looking at how to add a page from your external site.

Adding a Page (External Site)

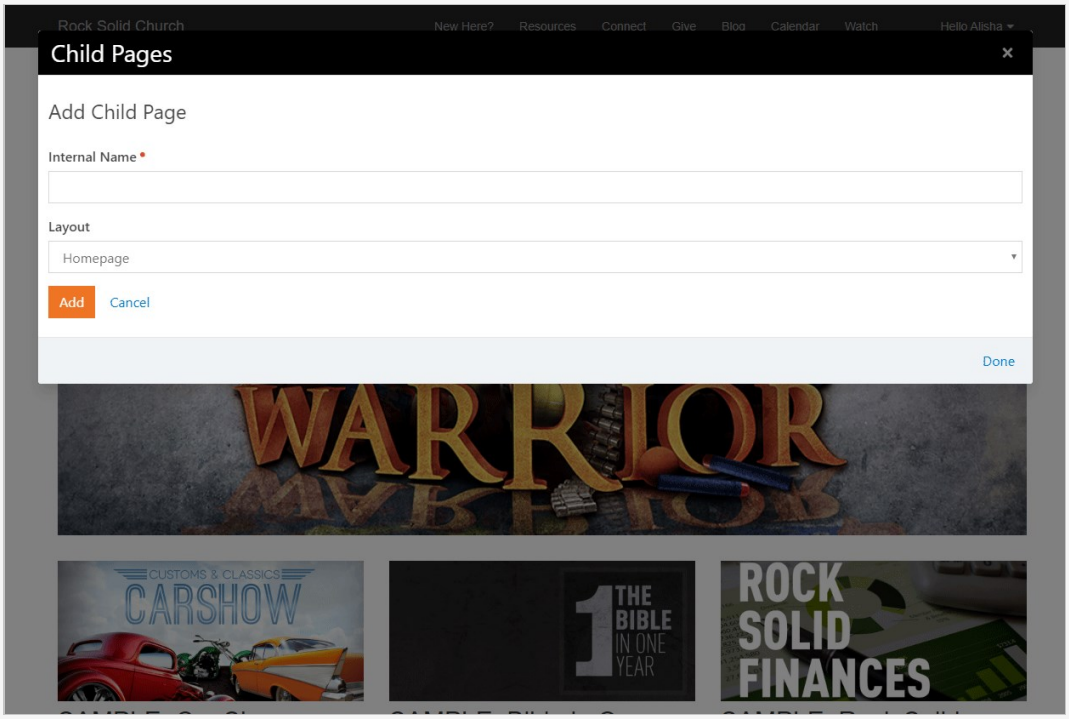
To add a page from your external organization site, follow these steps:

1. Navigate to the parent page that you want the new page to be under.
2. Click the (Child Page) button from the *Admin Toolbar*.
3. From the *Child Page* dialog, click the button to add a new page to the list.
4. The *Add* screen will allow you to provide a name for your page and choose a layout. To configure the page fully you'll need to click on it from the child page list and then click its (Page Properties) button on its *Admin Toolbar*.

Child Pages Dialog



Add Page Dialog

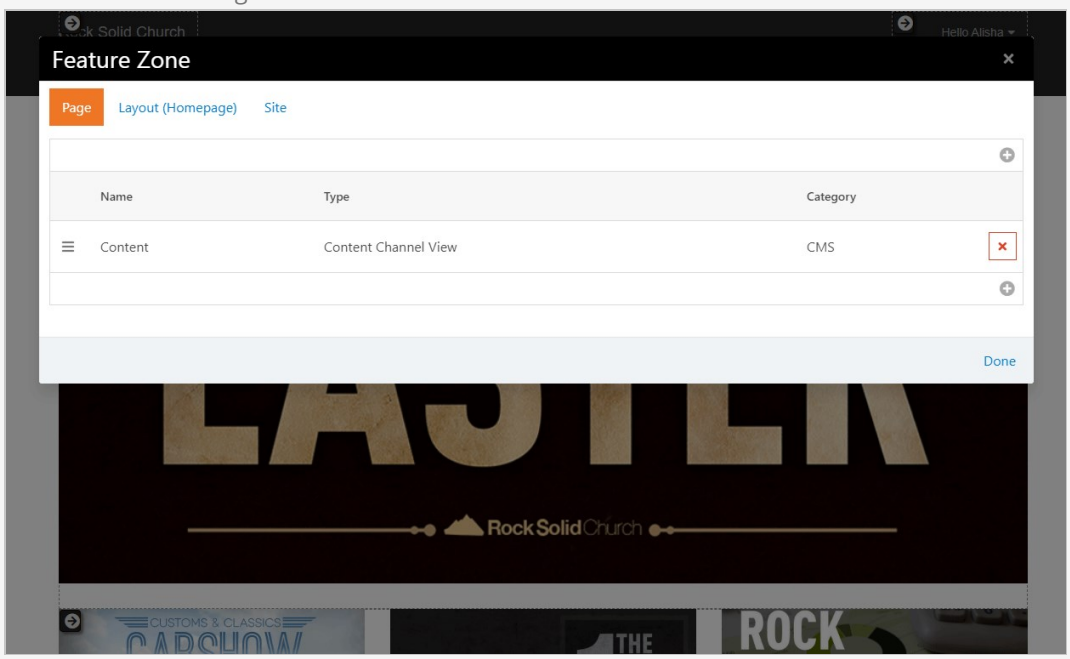


Adding a Block to a Page (External Site)

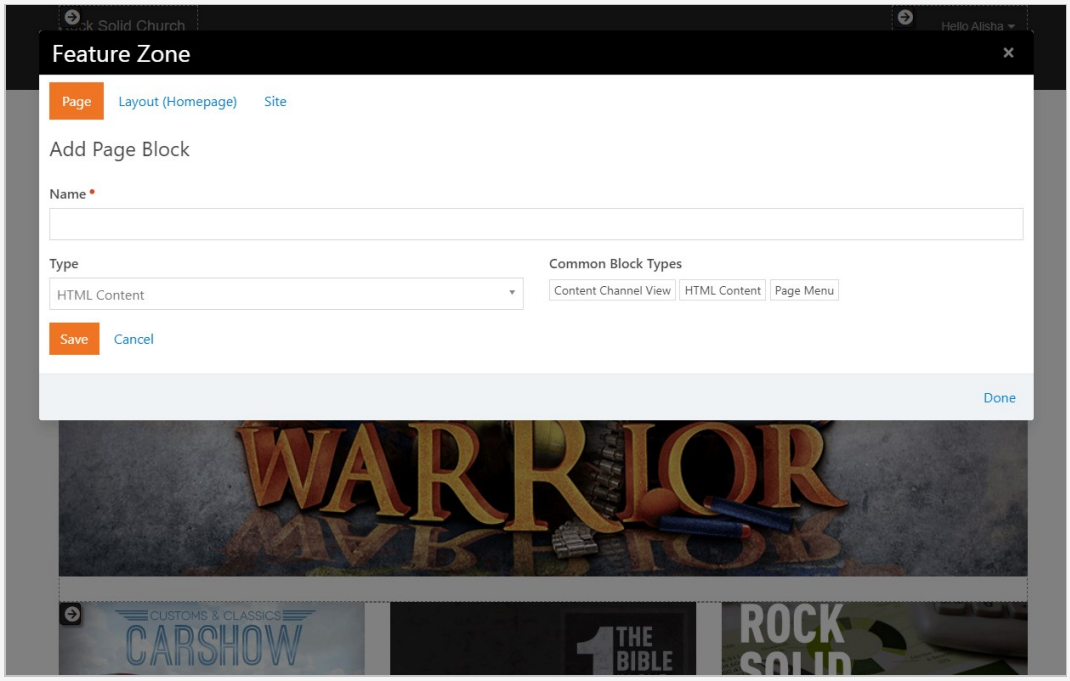
A small part of your content management duties will be to add and configure blocks on a page. To add a block to an existing page follow these simple steps.

1. Navigate to the page you'd like to add the block to.
2. Select the (Page Zone Editor) button in the page's *Admin Toolbar*.
3. This will highlight all of the zones on the page for you.
4. Select the fly-out toolbar for the zone you wish to add the block to and click its (Zone Blocks) button. This will bring up the zone's block list.
5. From here you have a decision to make. Do you want the block to live on just this page, on every page that uses this layout, or across your entire site? Decide by picking the appropriate tab at the top of the dialog: Page, Layout or Site. Keep in mind, choosing any option other than Page carries some risk. The Layout and Site options are best used for blocks you're certain belong on multiple pages, such as headers and footers.
6. Next, click the (Add Block) button to add the block to the layout. Like adding a page you'll just provide a name for your block and the type of block you wish to add. You'll add more configuration later.
7. Next, determine in what order you want your block to appear within the zone. You can move it up or down by dragging and dropping the order on the list.
8. Now that you've added your block to the list, click the `Done` link and reload your page. Your new block will now be on the page.
9. In most cases, you'll now need to configure your block. To do so click the (Block Configuration) button in the *Admin Toolbar*. This will highlight each block on the page.
10. To edit the settings, click the (Block Properties) button from the block's fly-out menu. This will bring up the block properties dialog with all of the settings for the selected block.

Zone Block List Dialog



Add Block



Now that your page is created and your block structure is set up, it's time to configure your page properties and add content. To learn how to do this, see the Managing Content and Pages section below.

Adding a Page (Internal Site)

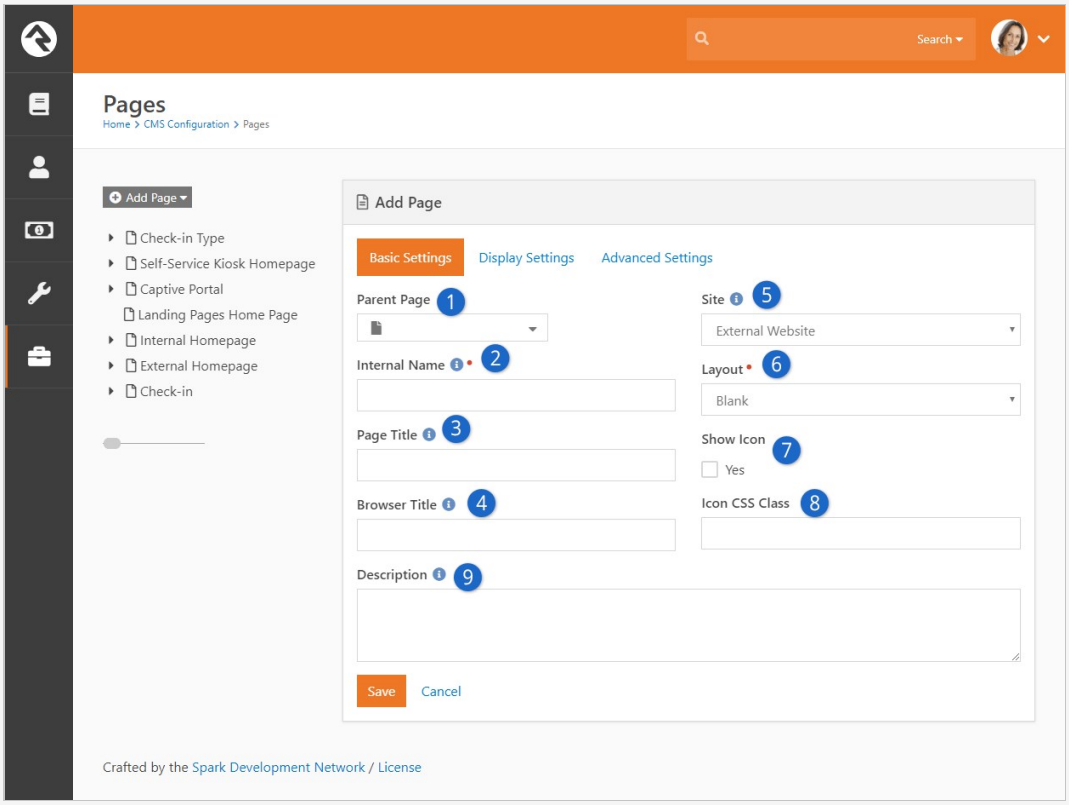
Adding a page from your internal site allows you to both create a page and configure its properties in the same place.

Begin by going to `Admin Tools > CMS Configuration > Pages`. You'll see a tree navigation of the pages

of your site, as well as an `Add Page` button. Click `Add Page` and select either "Add Top-Level" or "Add Child To Selected". Rock will then display the *Add Page* screen.

The *Add Page* screen has three tabs: Basic Settings, Display Settings, and Advanced Settings. This is where you set up the new page's properties.

Add Page - Basic Settings



1 **Parent Page**
You can easily change the parent page for your selected page. This will alter where that page is displayed in the navigation.

2 **Internal Name**
This is the name of the page that is used in the admin menus and page pickers. Often, in these situations, you want the page to have a more descriptive name than you might want to be displayed in a menu on the site. For instance, you might want the homepage of a site to have the internal name of "Youth Sports Homepage" but when you're on the site the title should be simply "Home" on the menu.

3 **Page Title**
This is the name that will be used for the page title element on the page. It will also be used in the navigation menus and breadcrumbs.

4 **Browser Title**
For Search Engine Optimization it's often important to have a different name in the browser's title. This setting allows you to edit this.

5 **Site**
Each page belongs to a site. You can change the site for a page with this setting. Keep in mind that the page gets its theme from the site, so changing this setting could change how the page is displayed.

6 **Layout**
This selects the layout that the page should use. Further discussion of layouts can

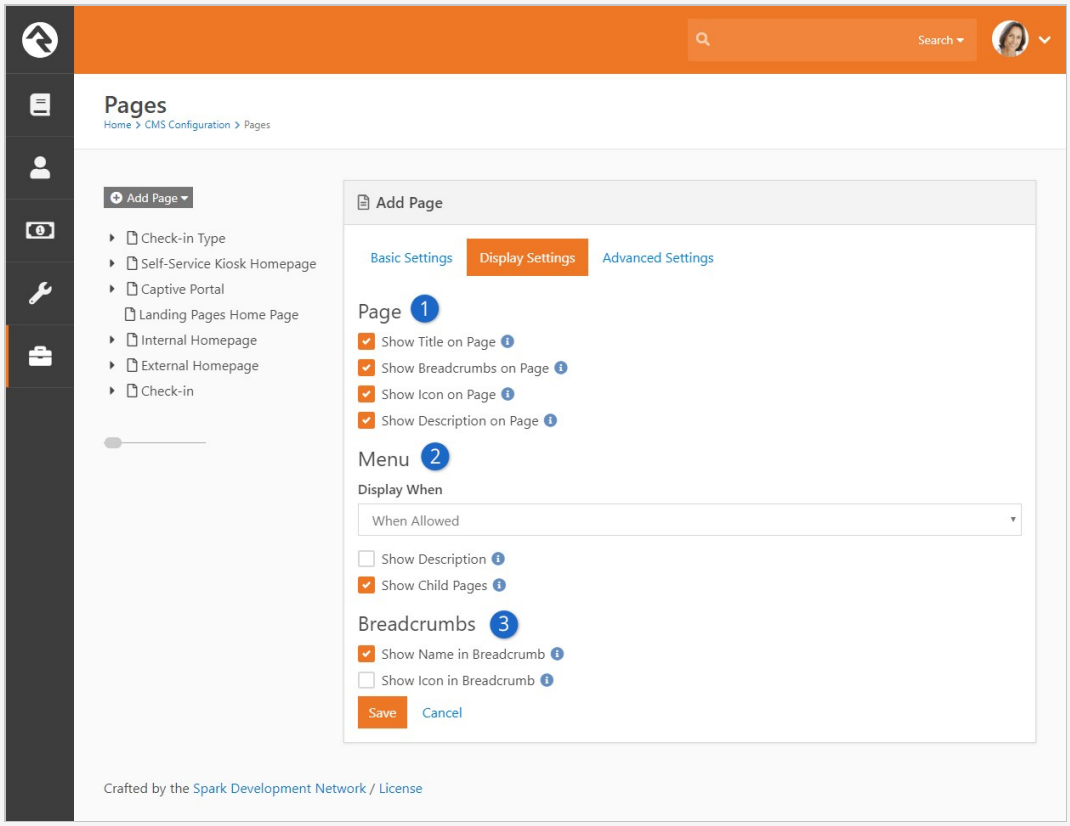
be found in the chapter Looking Deeper at Layouts.

7. **Show Icon**
   An icon can be used in the page title and breadcrumbs if it is enabled with this setting.

8. **Icon CSS Class**
   This setting allows you to enter the CSS class for the font icon you wish to use. While Font Awesome is installed, there's no reason you can't add your own alternate font icon collection and enter your custom class here. When using Font Awesome, you should use the syntax `fa fa-[icon name]`.

9. **Description**
   The description gives a short summary of the page and its intent. You can use this as "internal documentation" or, using Lava, you can use it in your menus and page listings.

Add Page - Display Settings



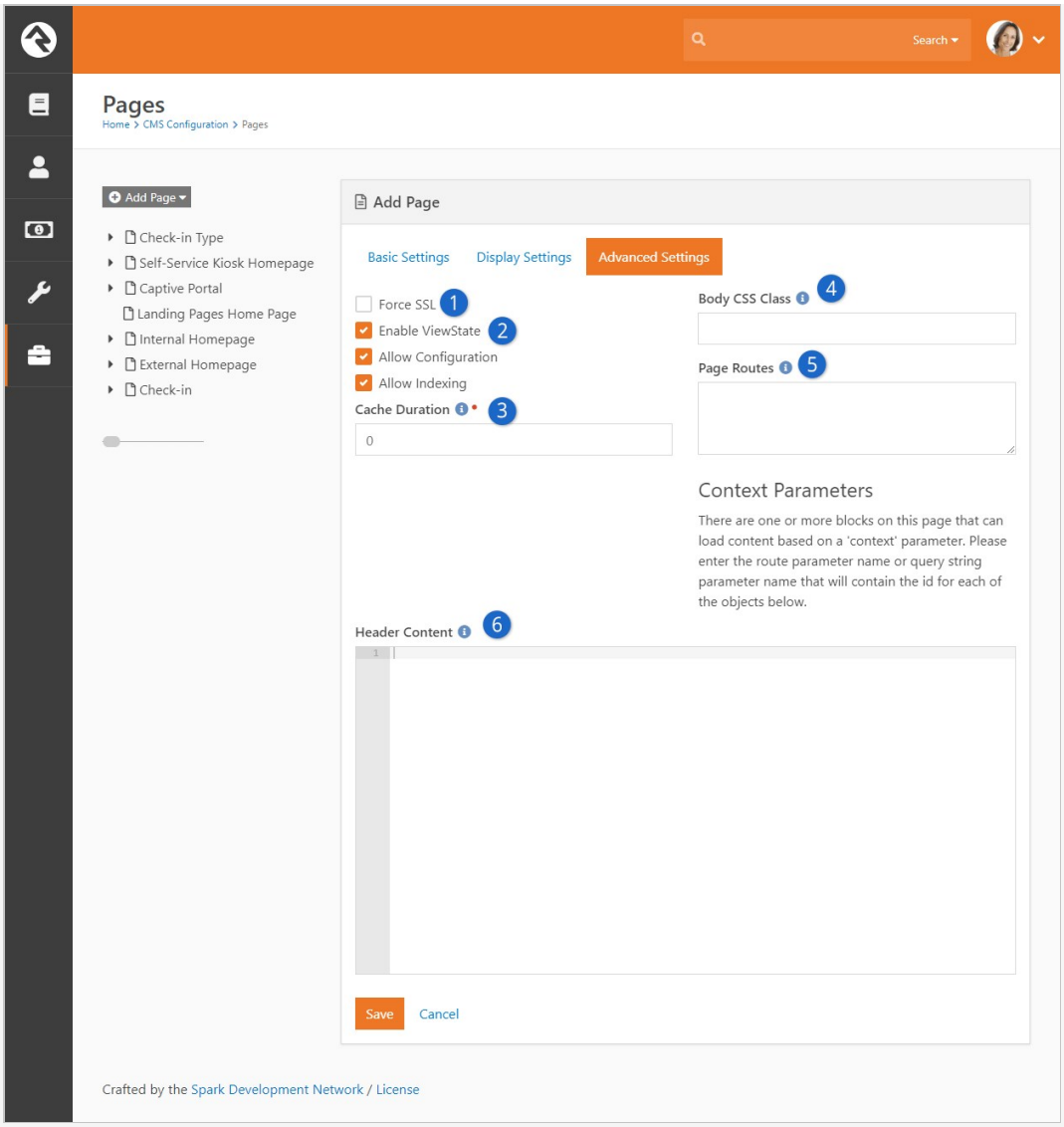
1 **Page Display Settings**
These settings control the view state of various components of the page (title, breadcrumbs, description, etc.) How these actually render on the page is somewhat dependent on the theme you are using.

2 **Menu Display When**
How and when a page is displayed in a menu has several different options.

- **When Allowed:** With this default option a page will only be displayed in the menu when the person has view permissions to the page.
- **Always:** You may want some pages that require a login to be displayed in the menu even when the person isn't logged in. When the person clicks the link, they will be asked to log in before proceeding to the page. This is helpful for things like group toolboxes where you want the person to see the option and then log in before they can view the contents.
- **Never:** Some support pages aren't meant to ever be navigated to directly. Setting them to *Never* ensures that nobody accidentally views them in a menu.

3 **Breadcrumb Settings**
These settings determine whether a page should be displayed in the breadcrumbs and, if so, whether an icon should be included. Some designers set the name to not display but will show an icon for homepages.

Add Page - Advanced Settings



1 **Force SSL**
This ensures that the page will always load using SSL. This is important for pages like giving or online registration where credit card information will be used on the page. This does require that your webserver is configured to support SSL.

2 **Enable ViewState**
ViewState is a .Net technology that allows a page to remember its state across postbacks. If this doesn't make complete sense to you, you probably shouldn't uncheck the box. In most cases bad things will happen if you do.

3 **Cache Duration**
This setting sets a page cache header in the page that tells the browser to cache the page locally for the provided timeframe.

4 **Body CSS Class**
You can enter a specific CSS class for a specific page in this field. For example, if you want to change the look and feel of a particular registration landing page, you can create a unique CSS class for that page and designate the class here.

5 **Page Routes**
You can enter page routes for the page here. Several routes can be configured by delimiting them with commas. For more information see the Routes chapter below.

6 **Header Content**

As a web designer we know you'll have custom scripts, meta tags, styling and more that you'll want to add to the page's header. Whatever text you add to this setting will be placed into the page's header.

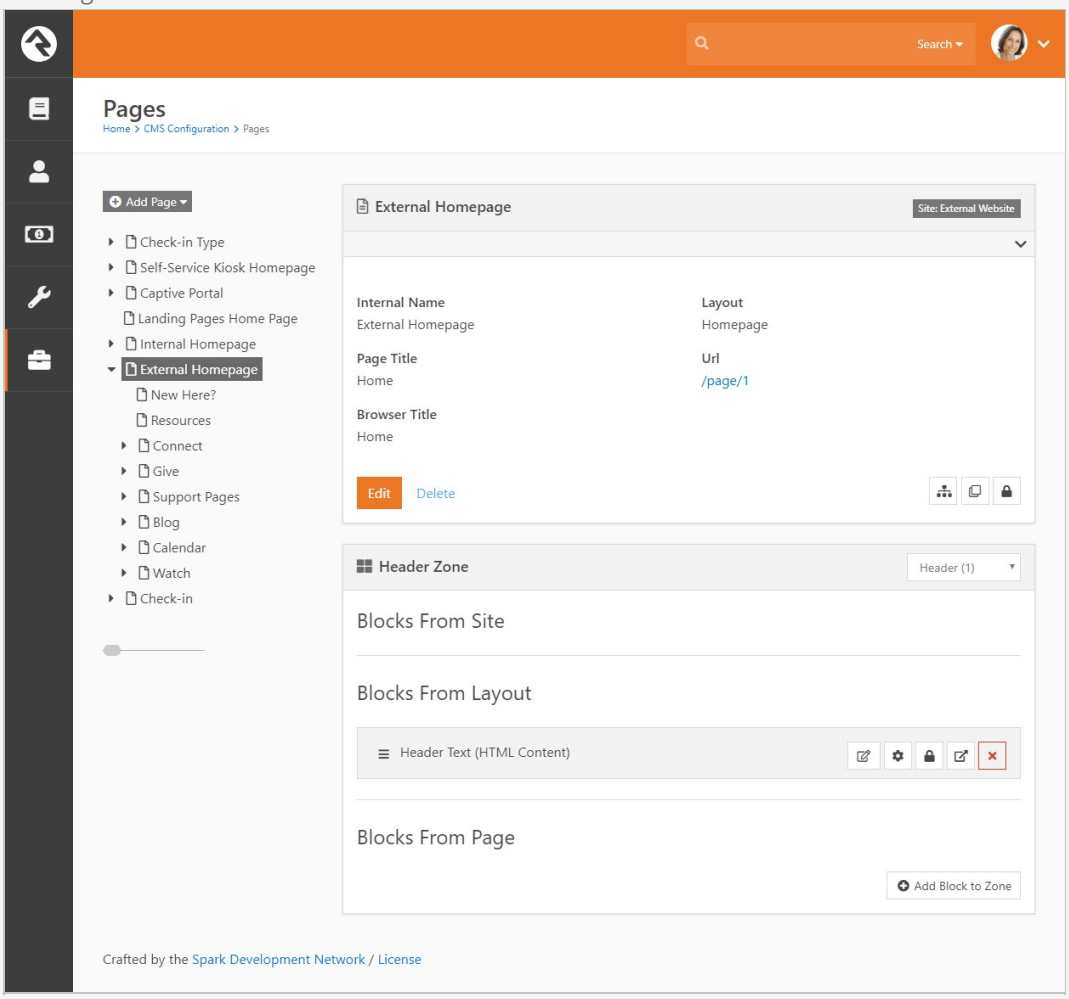
Click `Save` when you're done. Now it's time to add content to your page. To learn how to do this, see the Managing Content and Pages section below.

> **Saving Your New Page Configurations**
> While the `Save` button appears on each of the Add Page tabs, you only have to click it once to save the configuration settings for all three tabs.

Editing a Page (Internal Site)

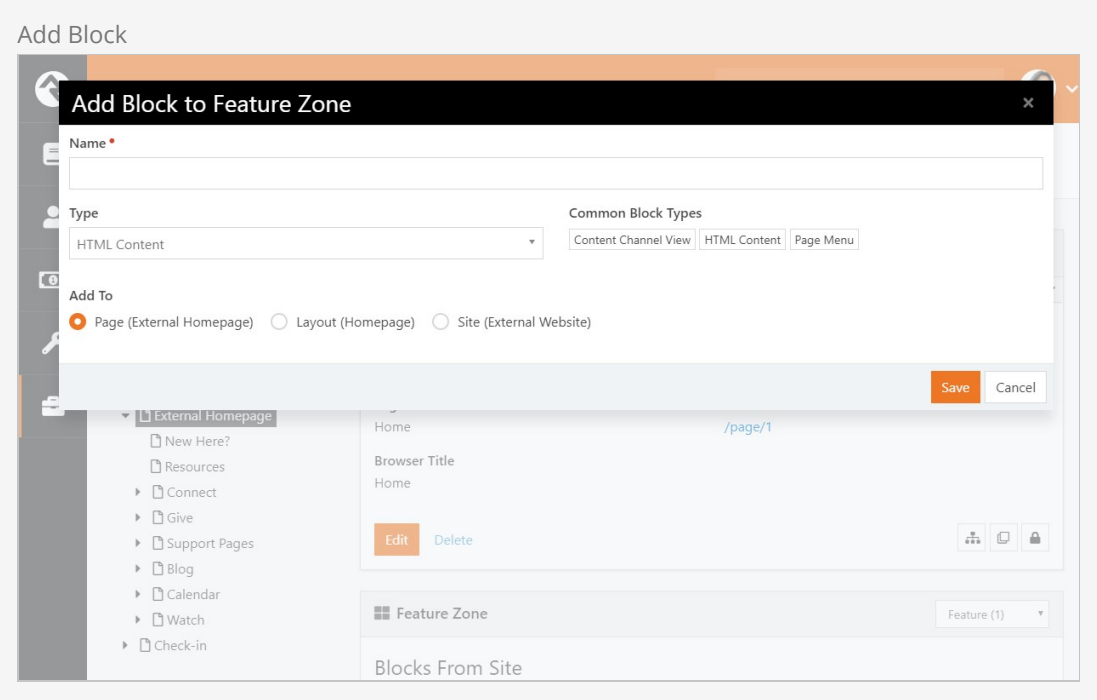
You can also edit a page's block configuration and properties from the internal site. From the *Pages* screen (`Admin Tools > CMS Configuration > Pages`), click the page you want to edit from the tree navigation.

Edit Page



From here, you can edit an existing block by clicking the button. You can also add a new block

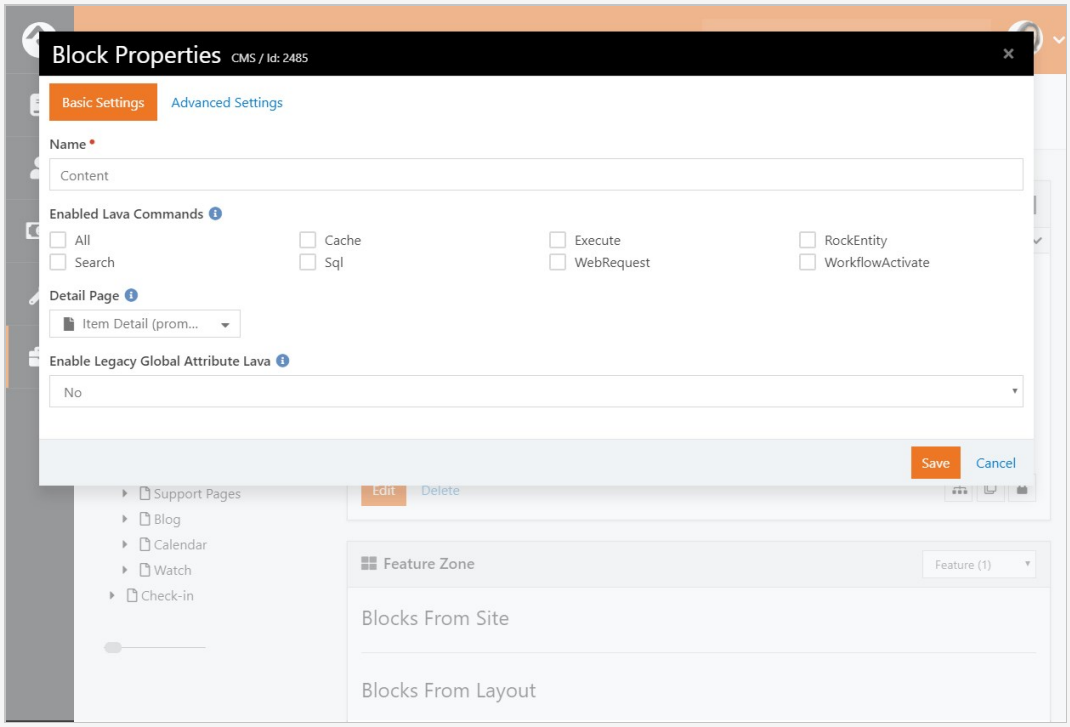
by selecting the zone where you want the block to go from the dropdown menu on the right, then clicking + to display the Add Block window.



Note here the option to add this block to the Page, Layout or Site. Just like adding a block to your external site, you need to decide if you want this block to only appear on the current page, on any page using this layout or across your entire internal site. The Layout and Site options are best used when adding a block you know for sure belongs on every page, such as a header or footer. Otherwise, it's best to use the Page option.

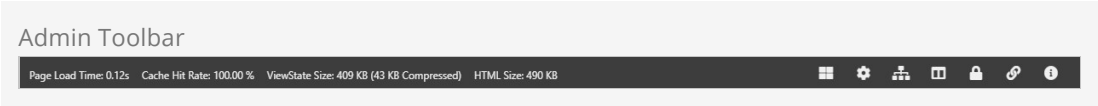
To edit an existing block's properties, click the ⚙ button. Rock will display the *Block Properties* screen. The options displayed will depend on the kind of block you're editing.

Block Properties



Managing Content and Pages

The *Admin Toolbar* is the gateway to a majority of Rock's content management features. This bar is displayed at the bottom of each page that the logged in person has rights to manage. It's always available at the bottom of the page, but it's hidden until you hover over it with your mouse.



You can find the following buttons/links on the toolbar:

- - Block Configuration
- - Page Properties
- - Child Pages
- - Page Zones
- - Page Security
- - Short Links
- - Rock Information

Page Load Time

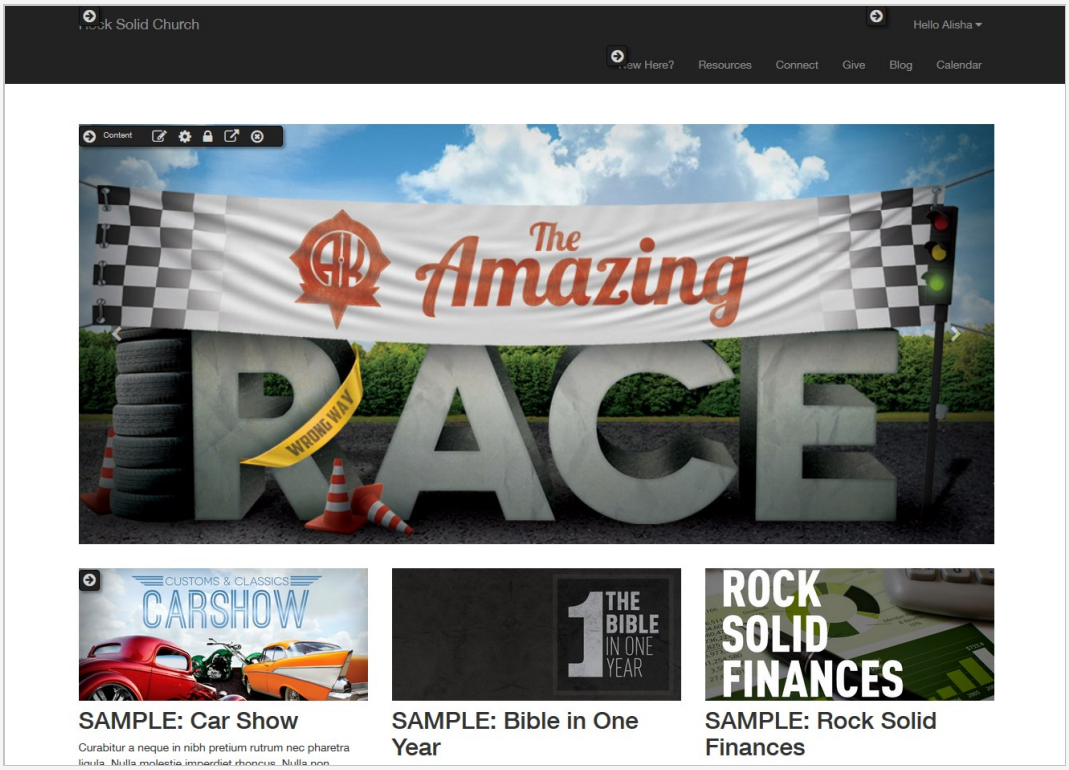
When we started to plan for Rock, we listed out our high-level goals for the project. One of these was "Speed as a Feature." For us that was more than just words, we wanted it to be real and measurable. One of the first features we added was the page load time in the admin bar. From that moment on speed was put in front of us on every page we loaded. We kept it there, not only as our contract with you, but also so you could measure your custom modifications.

Block Configuration

Clicking the block configuration button ( ) in the admin toolbar will bring up a fly-out menu over each block on the page. Rolling over these menus will allow you to:

- **Edit Content:** This opens the content for the block to be edited and managed.
- **Block Settings:** This brings up a dialog that allows you to manage the block settings for the block.
- **Block Security:** This item allows you to edit the security of the block. This not only allows you to control who can view a block, but also who can edit and administrate blocks.
- **Move Block:** Selecting this item allows you to move the block to a different zone on a page. You can also move the block from the pages zone to the layouts zone. This will make the block available to each page that uses the layout.
- **Delete Block:** For everything there is a season; a time to add and a time to delete. When it’s time to delete, use this option.

Block Flyout

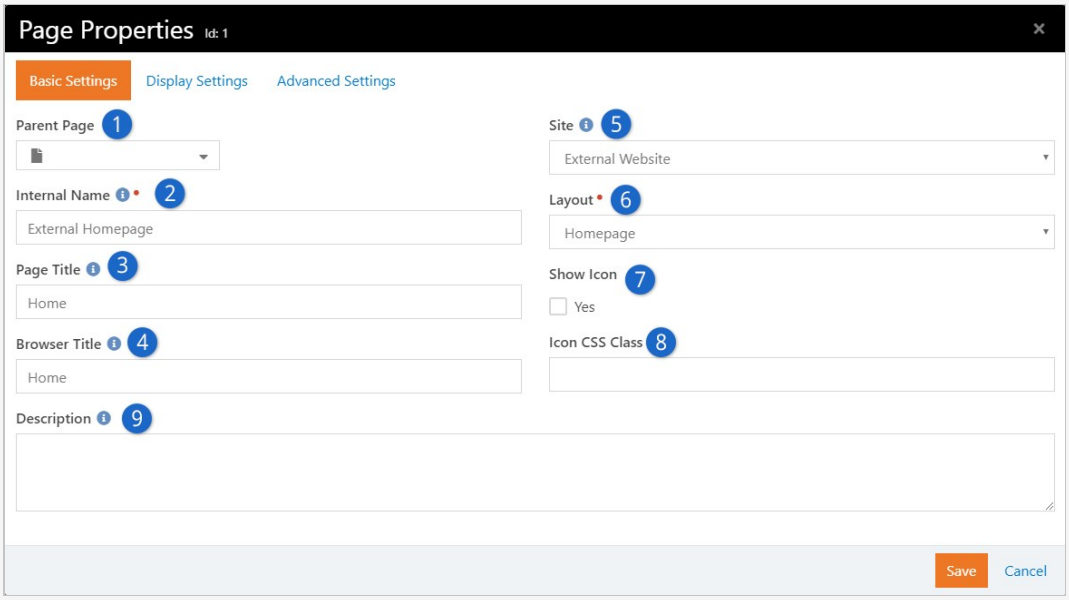


Page Properties

The page properties ( ) dialog allows you to edit all of a page's settings. We'll walk through each in detail. If you created your pages using the internal site method above, the following page properties screens might look familiar.

Basic Settings Tab

Page Settings - Basic Settings



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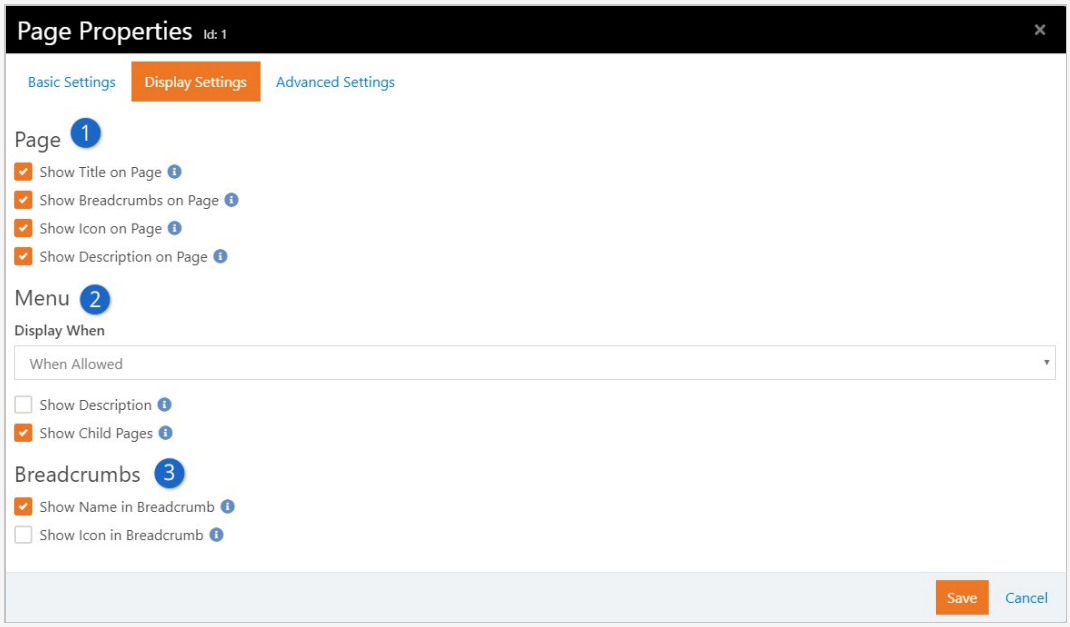
Display Settings

Page Settings - Display Settings



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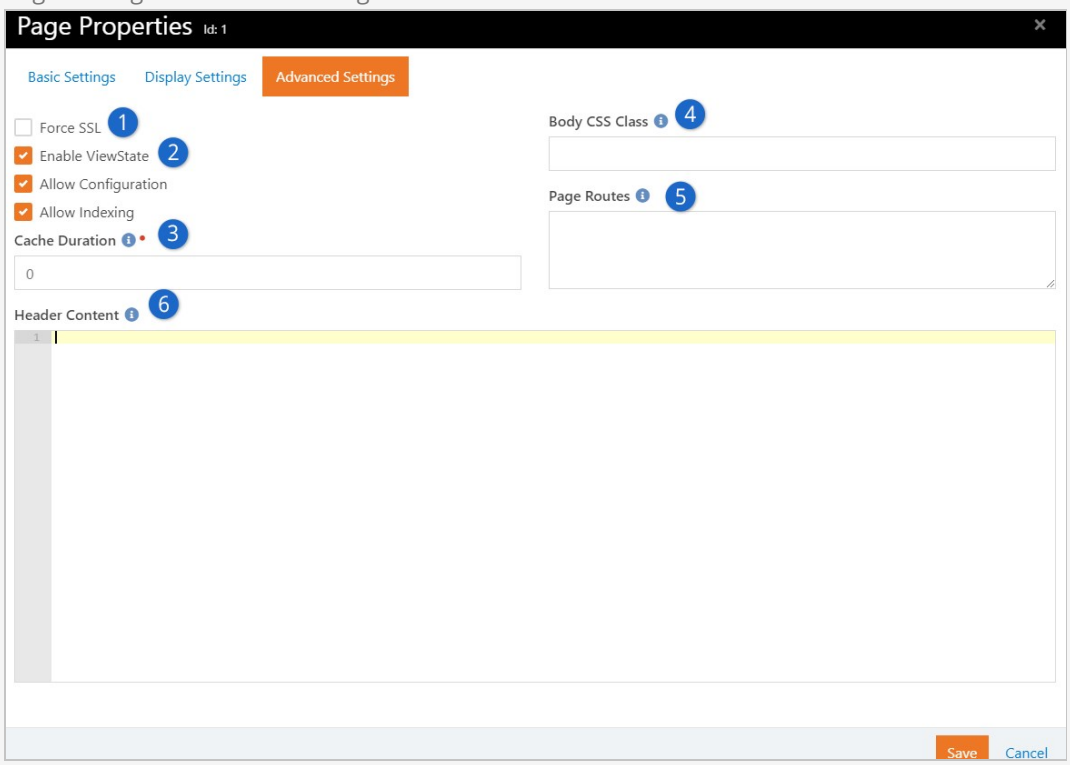
Advanced Settings

Page Settings - Advanced Settings



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   This setting sets a page cache header in the page that tells the browser to cache the page locally for the provided timeframe.

4. **Body CSS Class**
   You can enter a specific CSS class for a specific page in this field. For example, if you want to change the look and feel of a particular registration landing page, you can create a unique CSS class for that page and designate the class here.

5. **Page Routes**
   You can enter page routes for the page here. Several routes can be configured by delimiting them with commas. For more see the Routes chapter below.

6. **Header Content**
   As a web designer we know you'll have custom scripts, meta tags, styling and more that you'll want to add to the page's header. Whatever text you add to this setting will be placed into the page's header.

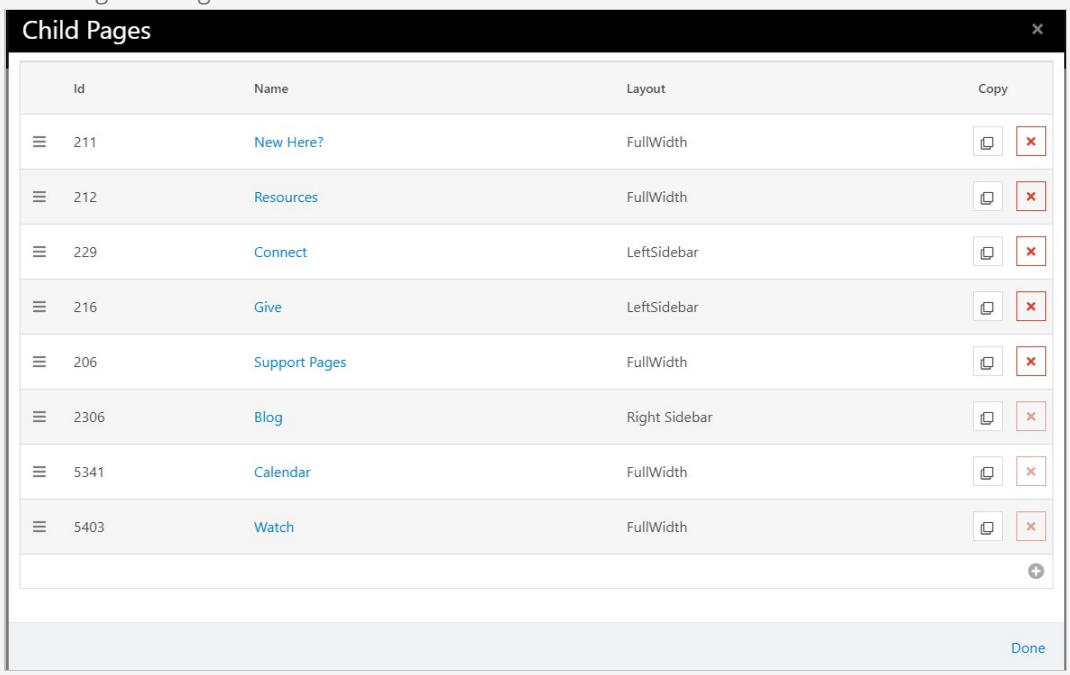
Child Pages

The child pages ( ) dialog allows you to see a list of child pages of the current page. From this

list you can reorder the pages, delete a page, copy an existing page or add a new page. You can also use this list to navigate to a page that might not be available in the menu.

When copying an existing page, not only is the page copied, but also the page blocks, child pages, and child page blocks. What a time saver! Even though Rock will re-wire up any references between the new blocks and new pages, it is wise to double check your block settings to verify everything is what you expect.

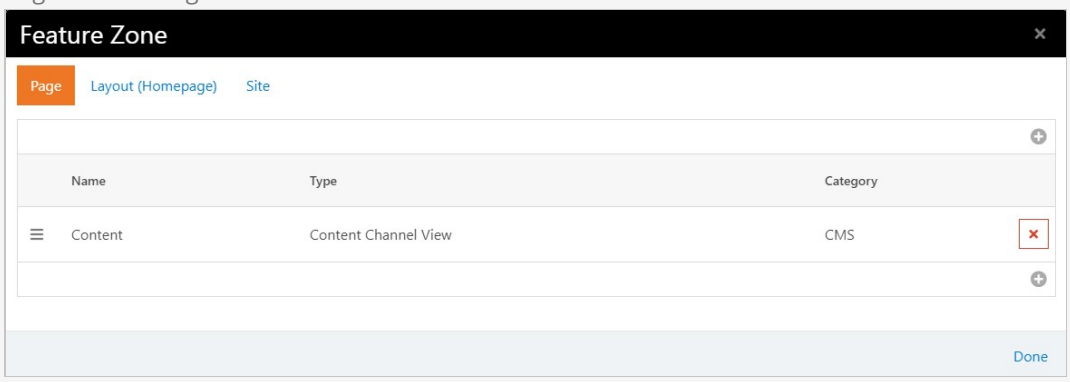
Child Pages Dialog



Page Zone

Clicking the Page Zones button ( ) will enable the zone fly-out menu for each zone defined on the page. From this menu you can bring up the zone dialog below.

Page Zone Dialog

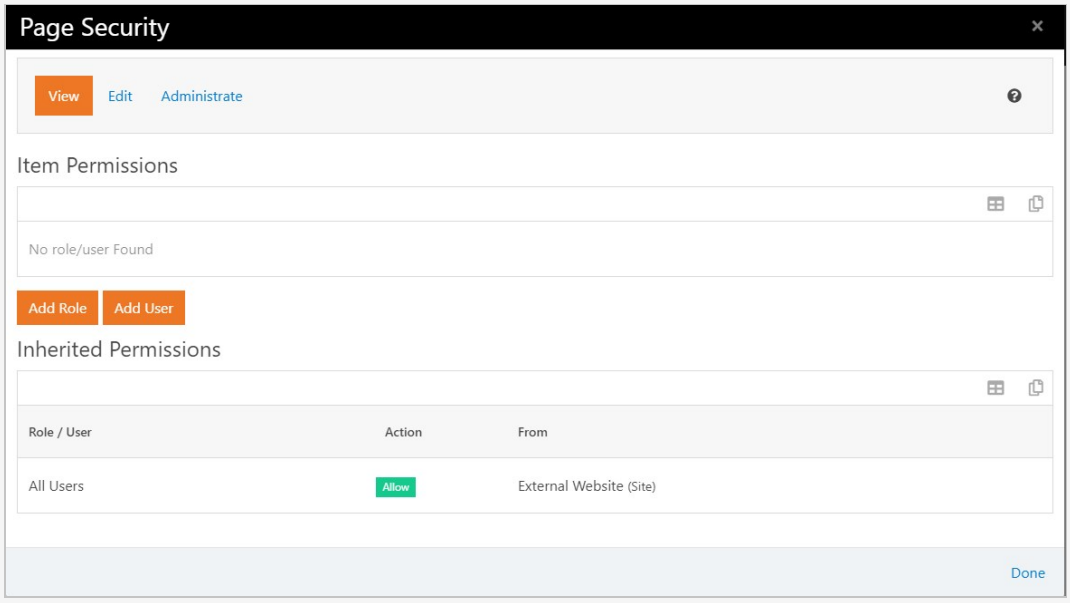


From the zone dialog you can add or delete blocks in a zone. The tabs at the top of the page determine if the blocks will be added to the current page or the layout. Adding the block to the layout will enable it to be shown on all pages that use that layout.

Page Security

The Page Security ( ) dialog allows you to set security for the page. This allows you to determine who can view and administrate the current page. Note that page security is hierarchical. If no specific security rights are defined by a page, it will use the security settings of its parent and its parent's parent. If no page above it defines any specific rights it will use the rights defined for the site. This allows for a robust and flexible security implementation with minimal configuration.

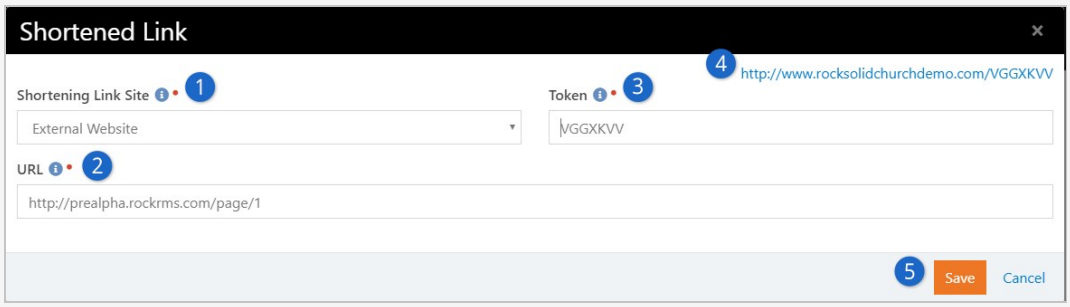
Page Security Dialog



Short Links

Short links ( ) are exactly what their name implies: short, user-friendly links that take the place of long, complicated URLs. Rock makes it easy to create your own short links. Clicking the button displays the Shortened Link window.

Shortened Link

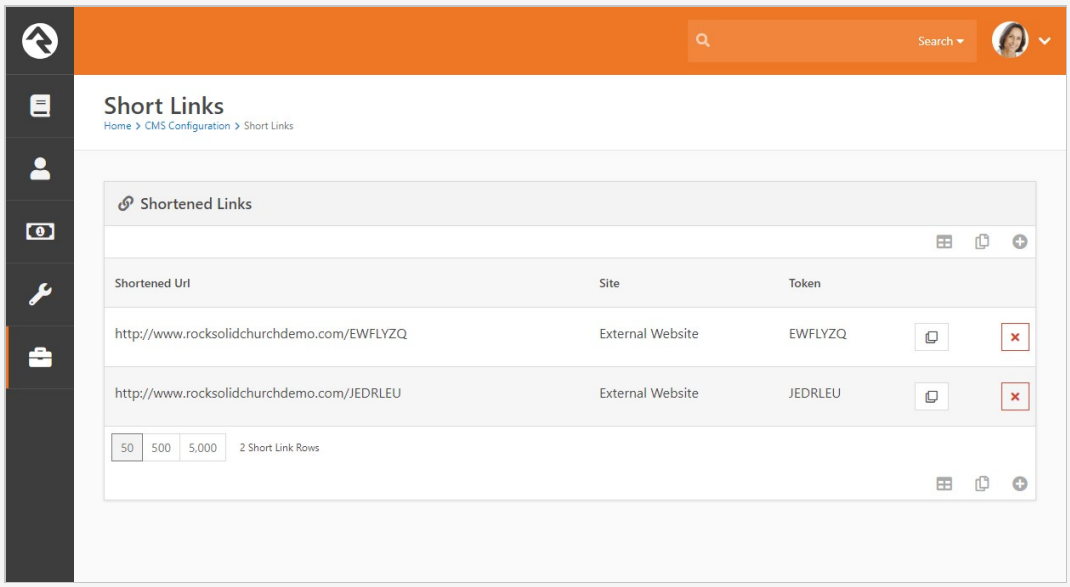


1. **Site**
   This is where you choose which site you want to use for the short link. Only sites that have the Enabled For Shortening option checked will appear in the options. The Enabled For Shortening option is located in the site's Site Detail screen. See Creating A New Site for more information.
2. **URL**
   This is the URL to which the short link will redirect individuals. The default is the URL of the current page, but you can change it to any valid URL.
3. **Token**
   The token is a unique, random value at least seven characters long that is used to identify the page in a short link. Rock generates a default token for you, but you can also provide your own. Remember, the token must be unique and at least seven characters long.
4. **Short Link**
   This is the short link created from the Site, URL and Token values. The short link will automatically update when values in the Site, URL and Token fields change. Clicking the link will automatically copy it to your clipboard.
5. **Save**
   The short link will not work until you click `Save`. Clicking `Save` will also automatically copy the short link to your clipboard.

Managing Short Links

As you create short links, they can be viewed and managed in the *Short Links* page found at `Admin Tools > CMS Configuration > Short Links`.

Short Links



Click on a short link from the list to view and/or edit its details, as well as to see where and how it's been used. Click the button to copy the short link to your clipboard.

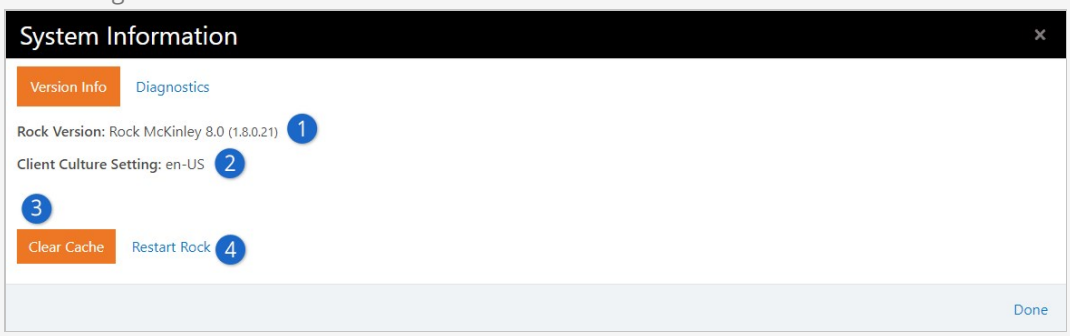
> ### Create Short Link Workflow Action
> You can also create short links as part of a workflow. For more information see Create Short Link, located in the Utility section of the Workflow Action Documentation.

Rock Information

Clicking the Rock Information button ( ) will display the System Information window where you can view the version info and diagnostics.

Version Info

Info Dialog

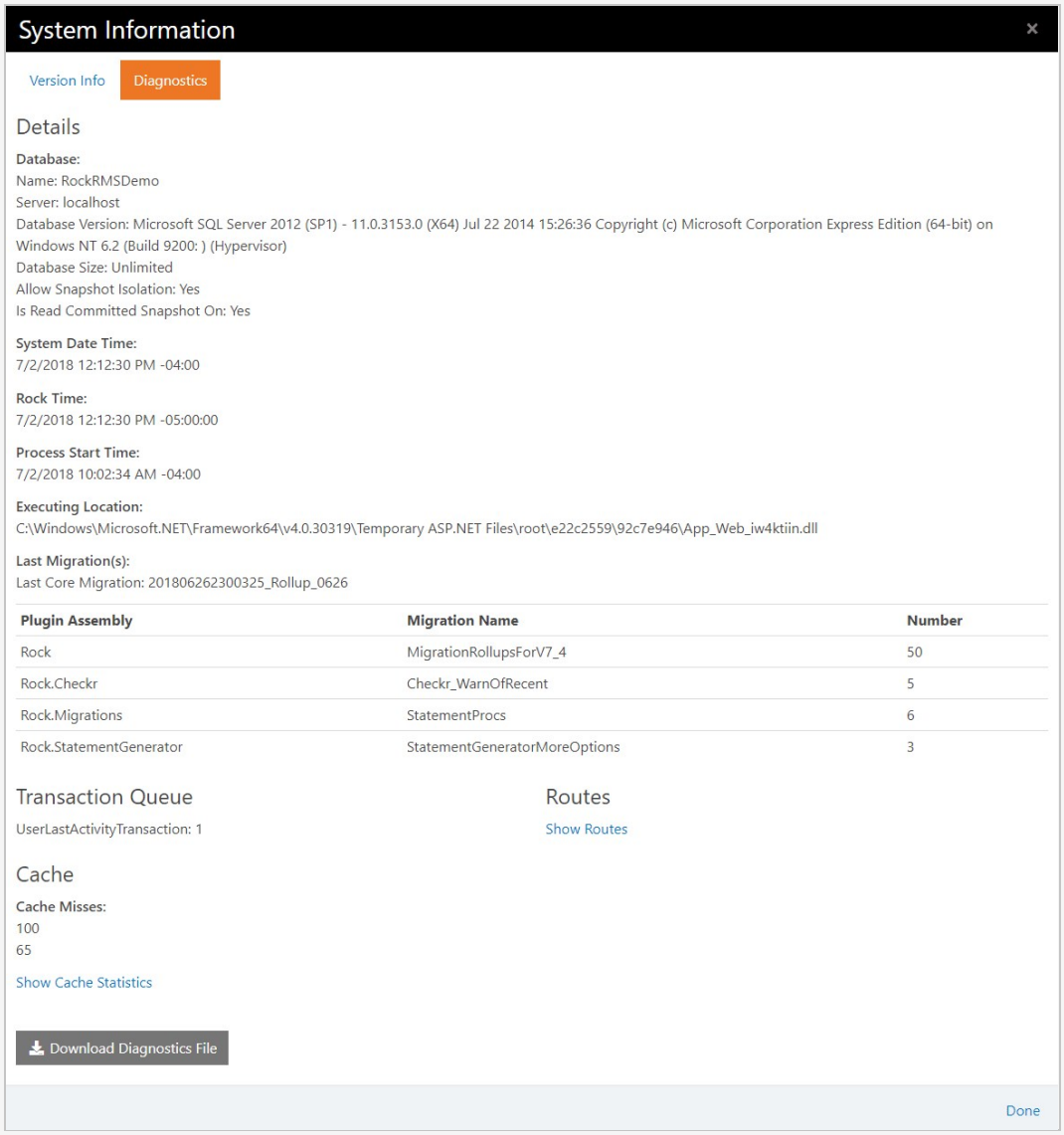


1. **Rock Version**
   This shows the version of Rock that you are currently running.
2. **Server Culture Setting**
   These are the language and culture settings that the webserver is configured to use. This setting helps Rock determine how some of the international settings should be configured.
3. **Clear Cache**
   As you'll see, Rock's cache is an incredible thing. It drastically speeds up the performance of the site. It's also very smart and will clear old or modified content. At times though, you may need to clear the cache to remove information that is no longer valid. If you make a change and don't see it reflected on a page, consider trying to clear the cache with this option.
4. **Restart Rock**
   Rarely you might get into a situation where you need to "reboot" Rock. This button acts as Rock's reboot switch.

Diagnostics

The diagnostics tab lists the complete configuration of your Rock environment. It's useful when working with others to debug an issue.

Diagnostics Dialog



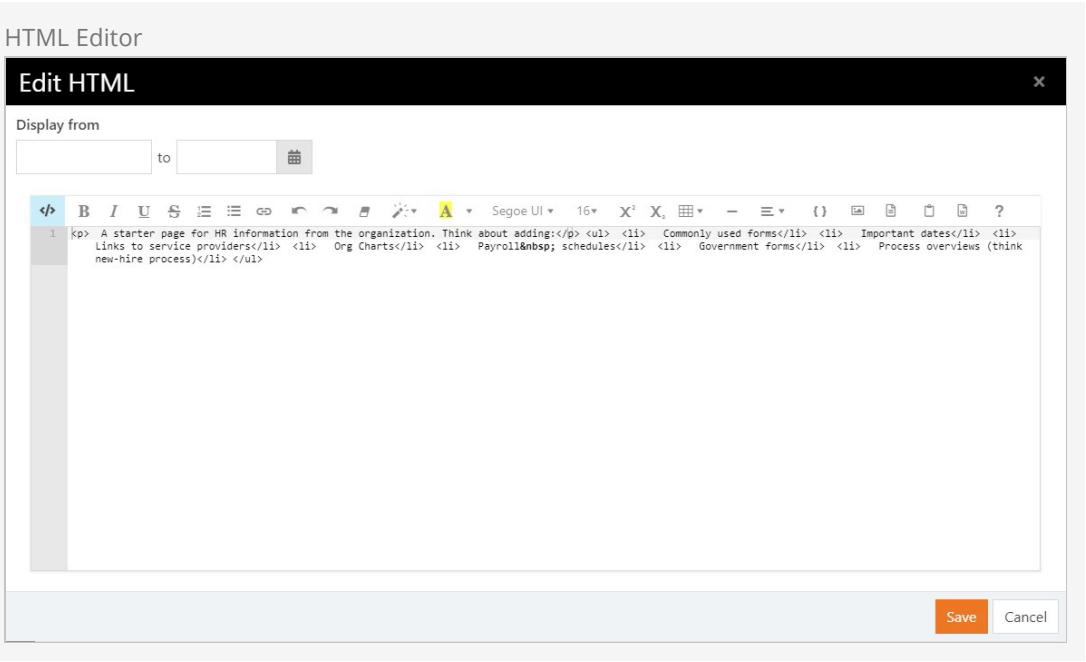
HTML Content Block

The HTML Content block is one of the most powerful blocks provided by Rock. As someone who creates and maintains websites, you're going to love it. Let's walk through each of its features in detail.

Basic Usage

To edit the HTML, click the icon in the *Admin Toolbar* at the bottom of the page. Next, place your cursor over the (Block Fly-out) toolbar and select the (Edit) button. This will bring up the edit modal (shown below). This modal allows you to edit the contents of the HTML. You can also set a date range that the content is valid for. This is great for adding date-sensitive messages. The content will be displayed until, but not on, the second date.

HTML Editor



HTML Content Block Settings

While the default HTML block settings are great for typical usage, you have a ton of extra options that you can use to do some really cool things. Like any block, to get to the settings click the icon in the *Admin Toolbar* at the bottom of the page and then select the button from the block fly-out menu. This will bring up the block settings dialog. Let's look at each setting in detail.

Editor Mode

The HTML editor has two different edit modes: code and WYSIWYG (What You See Is What You Get). The code editor mode (default) gives you a very powerful and rich code editor that allows

you to modify your HTML in a highly controlled manner. If you're comfortable writing HTML you'll love this mode as it will feel like your favorite code editor. Really, there are so many features. Check-out the keyboard shortcuts #mindblown

If you are more comfortable using a rich text editor that creates the HTML for you, change *Use Code Editor* to No. This will change the edit to a WYSIWYG editor. This editor includes a very nice image and file uploader that makes it simple to move your files to the server. And of course the asset manager to upload a file already stored in your cloud. There is also a merge field `{}` button that lists all of the personalized merge fields you can add to your content.

> **WYSIWYG Has Its Limitations**
> While the WYSIWYG editor is very powerful it does have its limits. The HTML markup it produces may frustrate the advanced web designer. We recommend using it to allow non-technical staff the ability to edit small portions of content. It works great for limited non-technical use. As you start to edit large portions of the page you may want to have more control of the HTML markup. This is where the code editor mode excels.

Document and Image Root Folders

The next two settings set the root folder for the image and document uploaders. This allows you to customize the location per block. This is helpful when you give a specific department access to edit a portion of their website. Instead of giving them access to the default contents folders, you can give them their own sub-directory. This helps keep things nice and tidy (OCD'ers unite!)

> **What's Up With the Tilde?**
> You may notice that many file paths in Rock start with the ~ character. This is a shortcut character that represents the application's home directory.

User Specific Folders

In some rare cases, you may want each person using the HTML editor to have access to their own directory when editing. We do this on the Rock website for the Q&A. Each person can upload images to include in their posts. However, we don't want individuals to see/edit/delete each other's photos on the server. By enabling the *User Specific Folders* option, each person will be given their own folder under the document and image root folder for placing their images.

Cache Duration

Caching is your friend, but to understand it you have to know what's going on behind the scenes. Whenever a person visits a page, Rock has to dynamically create the page by querying the database for all kinds of content. Rock must ask for and receive the most recent content from the database for each HTML block on the page. While this is relatively quick, it does take time. Caching speeds this up by keeping a copy of the content in memory so a trip to the database isn't needed. This can dramatically decrease the load time of a page. You may notice that the first time a page loads it's not as fast as subsequent visits. That's caching in action.

The *Cache Duration* setting tells Rock how long to store this copy, in seconds, before going back to the database for a new copy. This value is set to one hour by default. It's safe to increase this number because when the content is updated the cache is automatically expired. Setting it too high, though, could increase the size of the cache.

> **When to Avoid Caching**
>
> If the cache contains a Lava Command (like `{% stylesheet %}` or `{% javascript %}`), the command will not run. Split this code into a separate block that has caching disabled.
>
> Don't cache Personalized Content. If you have used merge fields in your content (similar to the baptism example in the introduction) it's important that you disable caching by placing "0" in this setting. Otherwise, individuals will see the personalized message from the first person who visits the page. That's embarrassing...

For more information on caching in general, check out the Caching for Rock Websites chapter of this guide.

Context Parameter

Use of context parameters is insanely powerful but a little tricky. Before we discuss how they can be used in the HTML editor be sure to first read about them in the Using Context chapter below.

The HTML Editor can dynamically merge in the contents of the context parameter. Say for instance your page allows the guest to switch the *Campus* context. You may wish to have the campus name appear in the content of your page. This is also useful when you have a page set with a group context.

The merge field format is `Context.[ObjectTypeName].[ObjectField]`. For example to display the current campus context name, you'd use a merge field of `{{ Context.Campus.Name }}`. Make sure that the HTML Content block is not caching, otherwise the content will not be dynamic.

> **Note**
>
> It's not required to set the "Entity Type" setting under the Context section of the HTML Content block settings for this to work. However, you may need to do that in some cases so that the page knows to load a particular object type into context.

Context Name

In many cases you might have content that you would like to be the same across a wide number of pages. A good example of this might be a copyright statement in the footer of each page. Adding this to each and every page would be a painful task, not to mention having to update it every year. Remember that while blocks live in a specific zone they can be applied to a page or a layout. When assigned to a layout, the content will appear on every page that uses that layout. That gets us closer to our desired state, but we still need to update the content on every layout. Enter *Context Names*. When you provide a context name, you are able to link HTML content across HTML editor blocks. All blocks that use the same name in the *Context Name* setting will share the same content. Edit in one place and it will change in all blocks.

So for our footer example we could put the name "website-footer" into the *Context Name* of each HTML block in every layout. After setting this up we can easily update it on every page with a single edit. Pow!

Require Approval

There is a leadership principle that says, "Trust, but verify." That's especially true when you give a non-technical staff member access to edit your external site. There are times when you'll want to see their changes before those changes go live.

By enabling the *Require Approval* box, all edits made by individuals without *Approve* rights to the block will not be shown until someone who does have rights approves them. This approval can be done under `Tools > HTML Content Approvals`.

> **Keep Your Eye On This Page**
> There are currently no notifications that content needs approval, so keep your eye on the *HTML Content Approvals* page. Notifications are coming soon.

When you enable approvals, versioning is automatically enabled too. Otherwise, the content would disappear from the page until the approval takes place. With versioning enabled, the previous content will show until the new content is approved.

Versioning

When you make an edit, sometimes you may want to keep a copy of the previous content. Enabling versioning will keep all previous copies of the content. While this is nice to have for use as a backup, it's even more powerful when used with date ranges. When versioning is enabled, Rock will pull the most recently approved content that meets the date range. This is very powerful when adding seasonal or temporary messages to a page.

Say for instance you want to add a highlighted message about an upcoming event. You could add a new version of the content with the highlighted message and provide a date range of when it should be shown. Working ahead (with Rock you'll actually have time to), you might add the content two weeks before it should be shown. Rock will keep the current content visible until the start date. Then the new event-specific content will be shown. After the end date, the previous content will again be what your visitors see. No need to remember to take it down. See all the time you're going to save?

Pre/Post HTML

You might be thinking, "That's a lot of features." But wait, there's more. Switching over to the *Advanced Settings* tab you'll find a couple more options. Sometimes you might want to give your staff access to edit portions of the page, but you don't want them to mess up parts of the content. For instance, there may be a start and end paragraph you don't want them to change or some special markup that's needed for styling. While you could add a secured HTML block before and after to hold this content, there's a much simpler solution. Content you add to the Pre/Post settings will be placed - you guessed it - before and after the content they can modify. This saves you from having to add additional blocks.

Merge Fields

It's time to change the paradigm of how you write content. With Rock, content doesn't have to be impersonal any longer. Using merge fields, you can customize the content for the logged-in person. Not only can you add their name, but you can look at all of the person attributes and make the content relevant to their relationship with your organization. Let's revisit the example from the introduction.

Adding the following on a baptism page allows for personal and actionable content:

```
{% if Person %}
    {% if Person.BaptismDate != '' %}
        {{ Person.NickName }}, remember the joy of your baptism? Share that joy
        with a friend who hasn't yet taken the plunge at one of our upcoming
        baptism events!
    {% else %}
```

```
        {{ Person.NickName }}, now is the time! Don't put off baptism any longer,
        take the plunge at one of our upcoming events!
    {% endif %}
{% else %}
    Take the plunge at one of our upcoming baptism events!
{% endif %}
```

Note the use of Lava syntax to add logic to the page. Here's how the markup above would look:

- If the person is logged in and has been baptized it shows the message: "Alisha, remember the joy of your baptism? Share that joy with a friend who hasn't yet taken the plunge at one of our upcoming baptism events!"
- If the person hasn't been baptized yet they will see: "Alisha, now is the time! Don't put off baptism any longer, take the plunge at one of our upcoming events!"
- Otherwise, if the person is not logged in they are greeted with: "Take the plunge at one of our upcoming baptism events!"

Besides information on the current person you also have access to all organization attributes and items in the context of the page. For more information on Lava syntax see the Lava Basics.

Pages vs Layouts

While it's already been noted before, remember that blocks can be assigned to either a page or a layout. When a block is assigned to a layout, it will be displayed on all pages that use that layout. This is especially useful with the HTML editor block as you'll often want bits of content to be consistently applied to several pages.

Content Component

In Rock there's lots of ways to put content onto a page. For example, in this manual we have sections covering HTML content blocks and Content Channel blocks. Another option is content components.

Content components can be thought of as a marriage between HTML blocks and Content Channel blocks. They're a blend of content and style. Website designers can create great looking templates and define which elements of information an editor needs to provide, while editors get a simple and clean tool for inputting their content without having to worry about breaking the website.

Each content component has a custom Lava template, so you can do amazing things with their values. Maybe you want to resize an image or add a clickable link to each heading. With Lava the sky is the limit.

Content components exist because your site editors shouldn't have to learn HTML to update your site. Without content components, an editor needs to memorize specific steps in the text editor to get a certain result or, worse yet, copy precise HTML markup. That approach is dangerous and prone to error. With content components you can template small blocks of content so that even complex markup requirements are easily implemented.

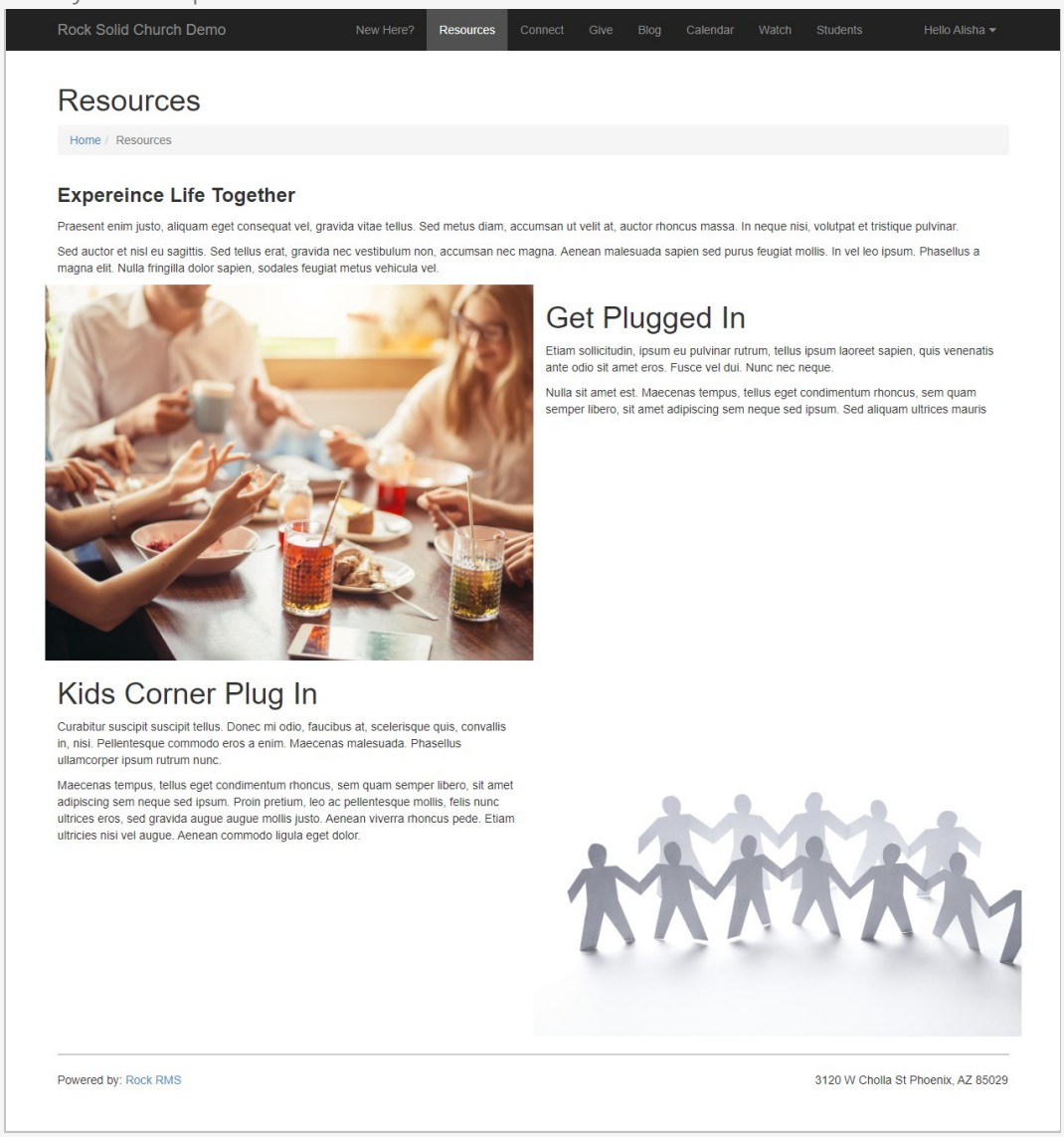
> **Content Channels and Content Components**
> To help understand a little about what's going on behind the scenes, it's important to note that there's a hidden content channel for each component.

Content Component Templates

With content components you'll use a set of templates to manage content. Each template provides a set of fields and a matching Lava template, which gives designers control over the output. Rock comes with a few example templates out of the box.

In the example below, the content component is set up with the *Side By Side* template. There are actually two items here, one with text on the left and another with text on the right. You'll see below how this kind of arrangement can be set up and changed.

Side By Side Template



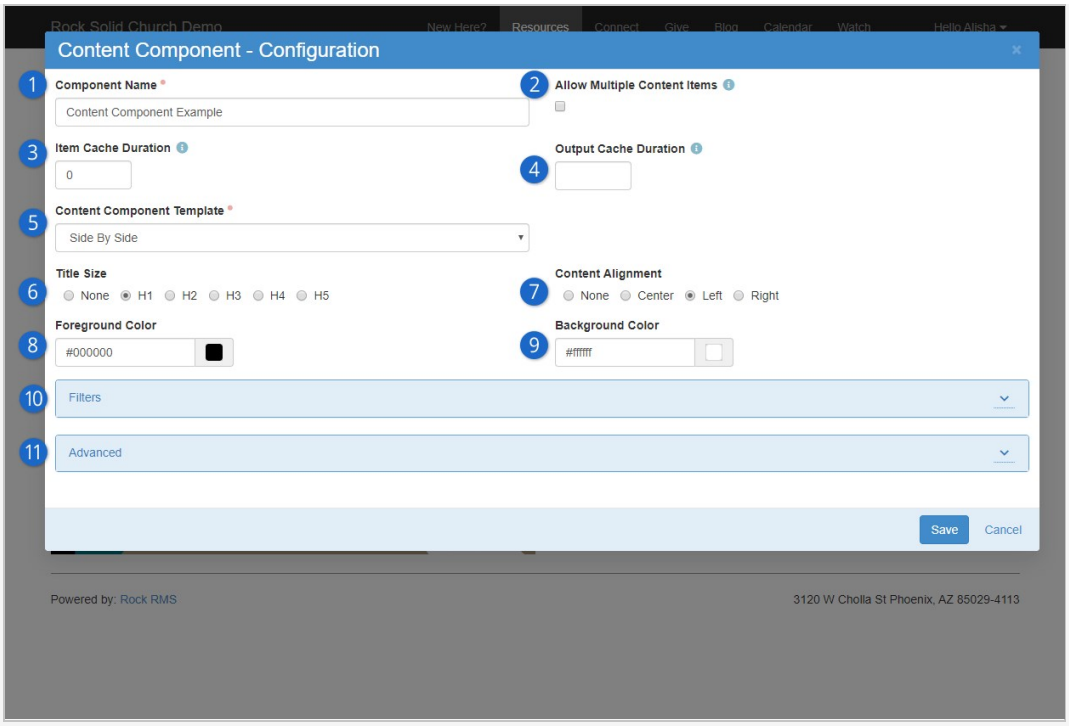
To achieve this consistent look the editors didn't need to learn HTML, they just entered text into a few fields! Let's take a peek at how this is set up behind the scenes.

Configuring Content Components

First, you'll need to set up the page and block settings. Check out the Page Zone and Page Properties sections for more details on doing that. When adjusting the *Page Zone* settings, be sure "Content Component" is selected as the page block *Type*.

Then, click the ⚙ icon for the block to open the content component configuration page.

Configuration Page



1 **Component Name**
Provide a name for the content component. This is only visible internally.

2 **Allow Multiple Content Items**
If you enable this, content creators can add several content items to a single section. The remaining block settings described here apply to all of the content items, so this option is great for ensuring consistency on the page.

3 **Item Cache Duration**
Rock can cache the items returned from the database to help improve performance. Here you can provide the item cache duration, in seconds.

4 **Output Cache Duration**
Rock can cache the page output as well. This improves speed, but is best used for non-personalized information. After all, you don't want to display a wrong name because the page is displaying cached output!

5 **Content Component Template**
Pick the content component template you want to use from the dropdown list of available options. There are three available out of the box, but you can add as many as you want.

6 **Title Size**
The font size of the title can be adjusted by selecting one of the available options. This follows standard heading (H) increments, so H1 will be larger than H2.

7 **Content Alignment**
Pick where your content should appear within the block. The impact this has will vary depending on the layout being used, so feel free to try different layout/alignment combinations to find what works best for your content.

8 **Foreground Color**
Select the color of the font for your content. This applies to both the title and the actual content.

9 **Background Color**
Select the color of the background for your content. The font/foreground color

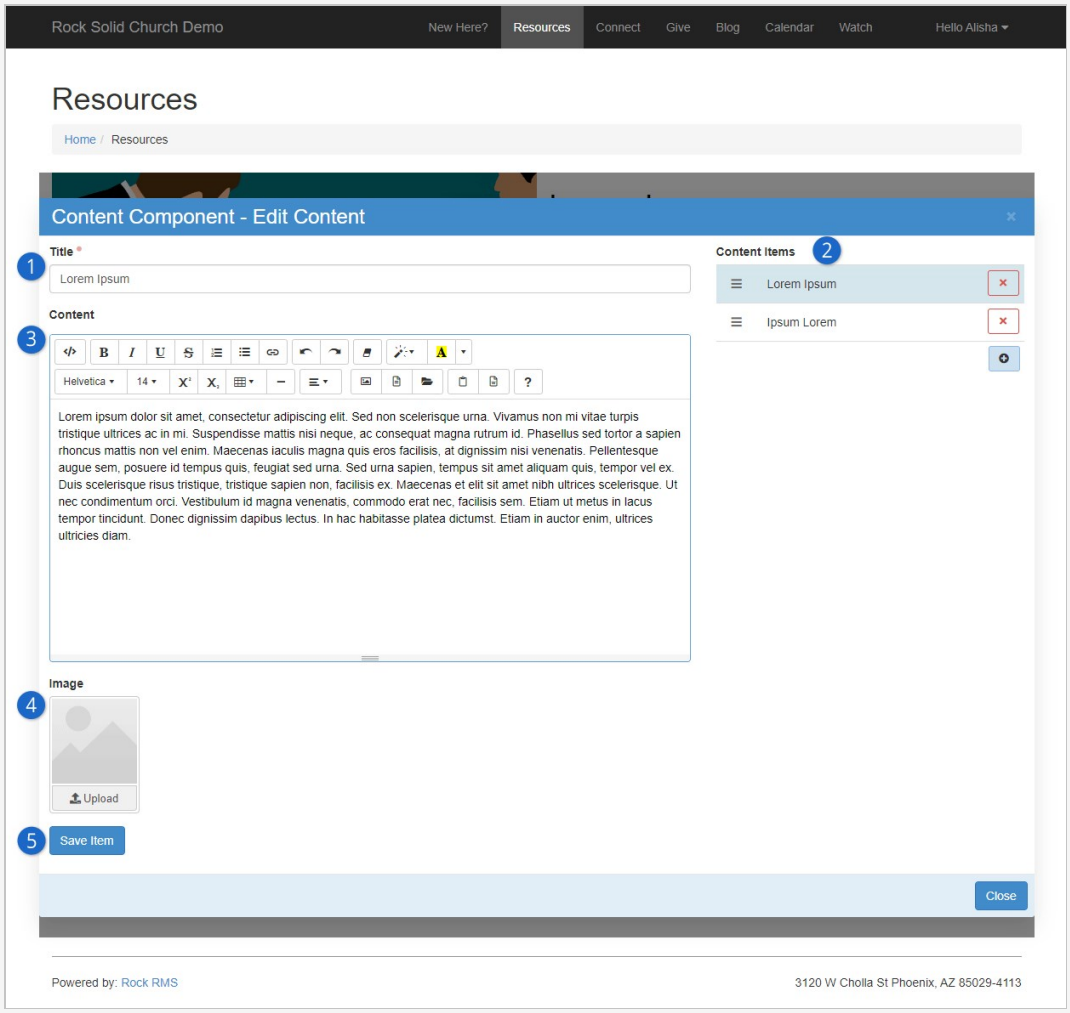
chosen will appear on top of the background color, depending on the layout and whether or not you're using a photo.

10 **Filters**
You can selectively filter what content to show based on one or more of the content channel item fields or attributes.

11 **Advanced**
As with most blocks, you can add custom HTML that renders before or after the block.

After the content component block has been set up, the configuration bar will have the ✎ icon available to add content.

Content Edit Page



1 **Title**
The title will appear on the website above the content you provide. The font size of the title can be changed using the block settings discussed above.

2 **Content Items**
This pane will only appear if *Allow Multiple Content Items* is enabled in the block settings. Here you can add, remove or change the display order of the block's content items.

3 **Content**
This is where the actual content is added and edited. This is designed with common word processing features that editors are generally familiar with, so they can be creative without getting technical.

4 **Image**
An image can optionally be added. Try using images with different layout and alignment options (in the block settings) to see what works best.

5 **Save / Save Item**
If *Allow Multiple Content Items* is enabled, then you'll have a `Save Item` button below the image upload area. If *Allow Multiple Content Items* is not enabled, then you'll see a `Save` button in the bottom right corner of the window, next to a `Cancel` button.

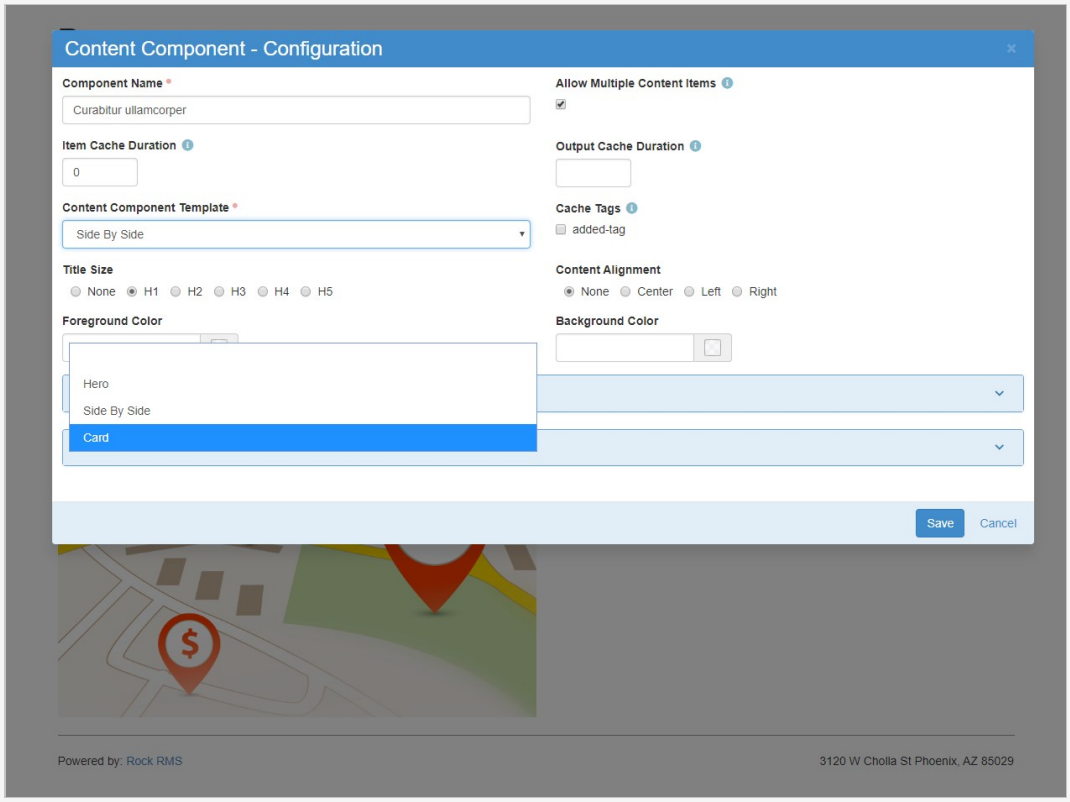
Save Item

As noted above, the `Save` button moves around and changes its name depending on your block settings. Whatever it looks like, don't forget to find it and save!

Add/Modify Content Component

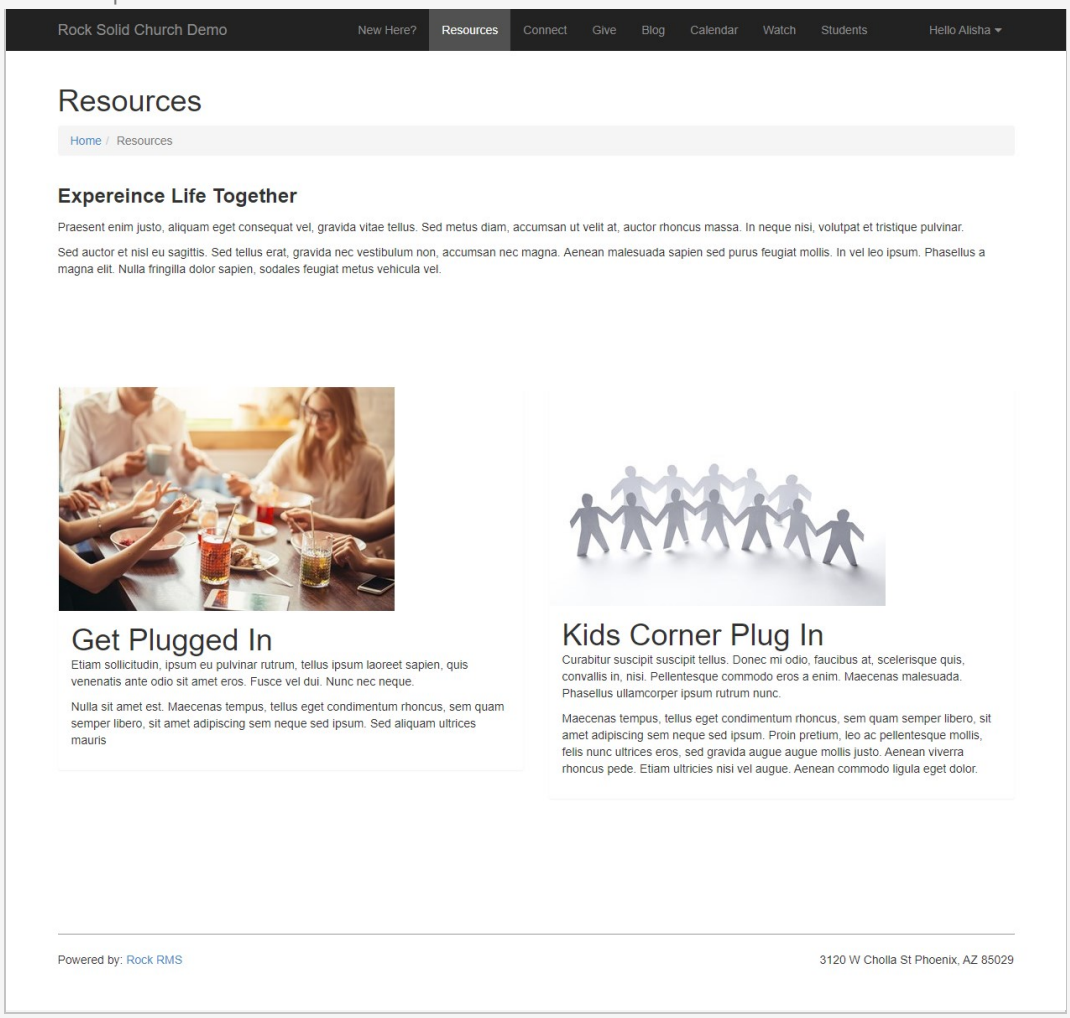
Now let's say we want to change our content component from the side by side view to the card view. Those who have full admin rights can do that on the fly by going back to the content component configuration page and changing the content component template.

Changing The Template



After the template has been changed the content will automatically be updated and will immediately look similar to this:

Card Template View



Simply changing the layout has resulted in a page with identical content but a very different look. Changing this setting, along with the other available block settings, ensures your website can look just how you want it without requiring editors to wade through complex coding.

Creating Content Component Templates

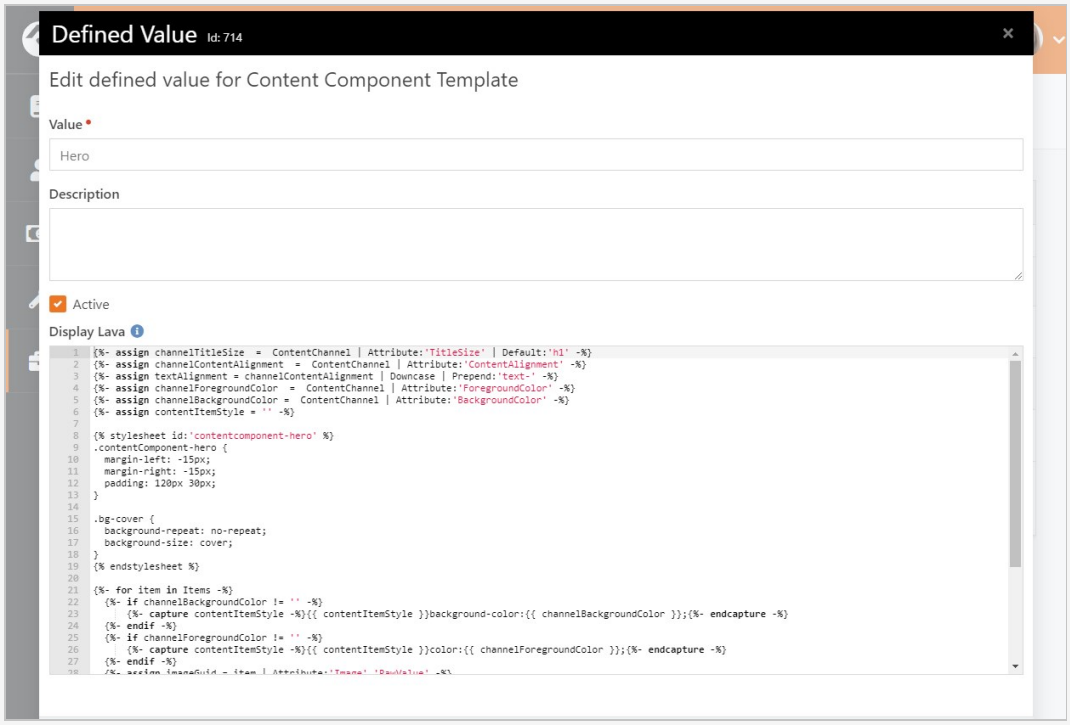
Three content component templates are available to you right out of the box, but you can create as many as you need.

To create a content component template, navigate to `Admin Tools > CMS Configuration > Content Component Templates` and click the ⊕ button on the grid.

Content component templates function just like content channel item lists, so all the power of Lava is available to you. To see all of the available attributes and properties just add `{{ 'Lava' | Debug }}` to the *Display Lava* field.

To make things easier we recommend copying an existing content component template (i.e. everything in the *Display Lava* field) to use as a starting point for building your own template. Your Lava will have access to both the content channel items related to the component as well as the configuration settings (like the heading size).

Content Component Template - Display Lava



Content Component Item Attributes

Content Components allow you to add attributes flexibly. You can make attributes available to an individual content component, to content components that use a specific template or to all content components.

Adding Attributes to Content Component Templates

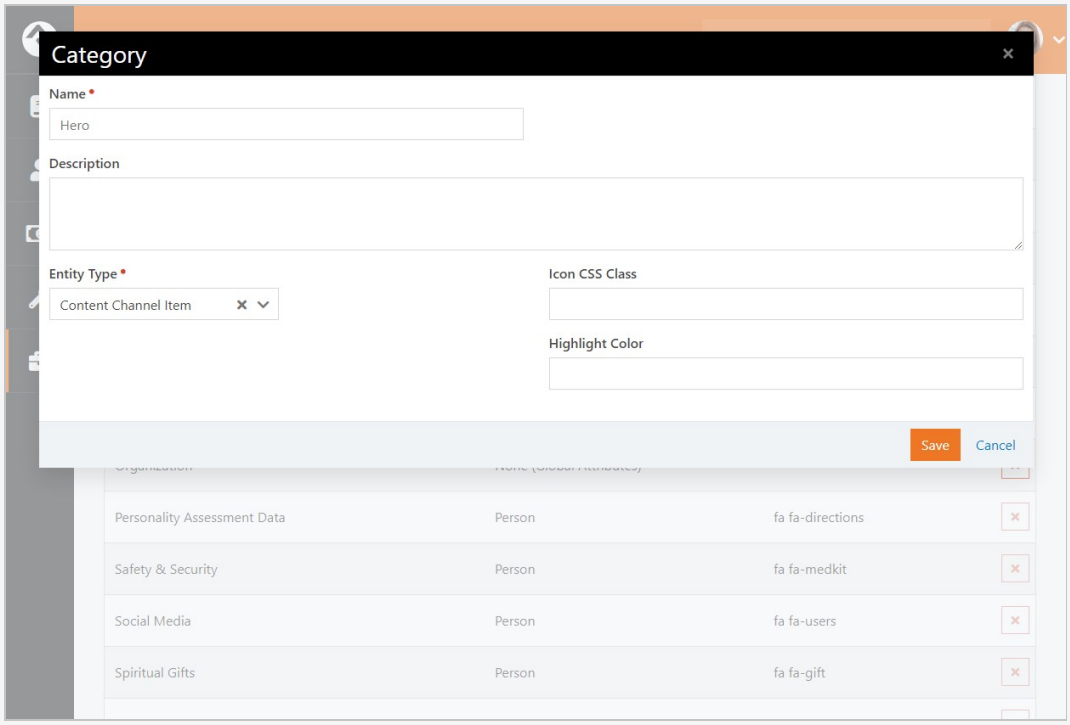
Typically, you'll be adding content component item attributes to a content component template. This allows you to use the attributes in a content component Lava template, guaranteeing that it will be available every time a block is added to the page.

To get started we'll add an attribute category to the setup. Navigate to `Admin Tools > General Settings > Attribute Categories` and add a new category.

In the *Name* field, provide a name that is identical to the content component template name to which the attribute will apply. For example, enter "Hero" for attributes you'd like to add to the Hero content component template. In this case, the attributes would not be available to the "Card" or "Side By Side" templates. You only need to add one category for each content component template you have.

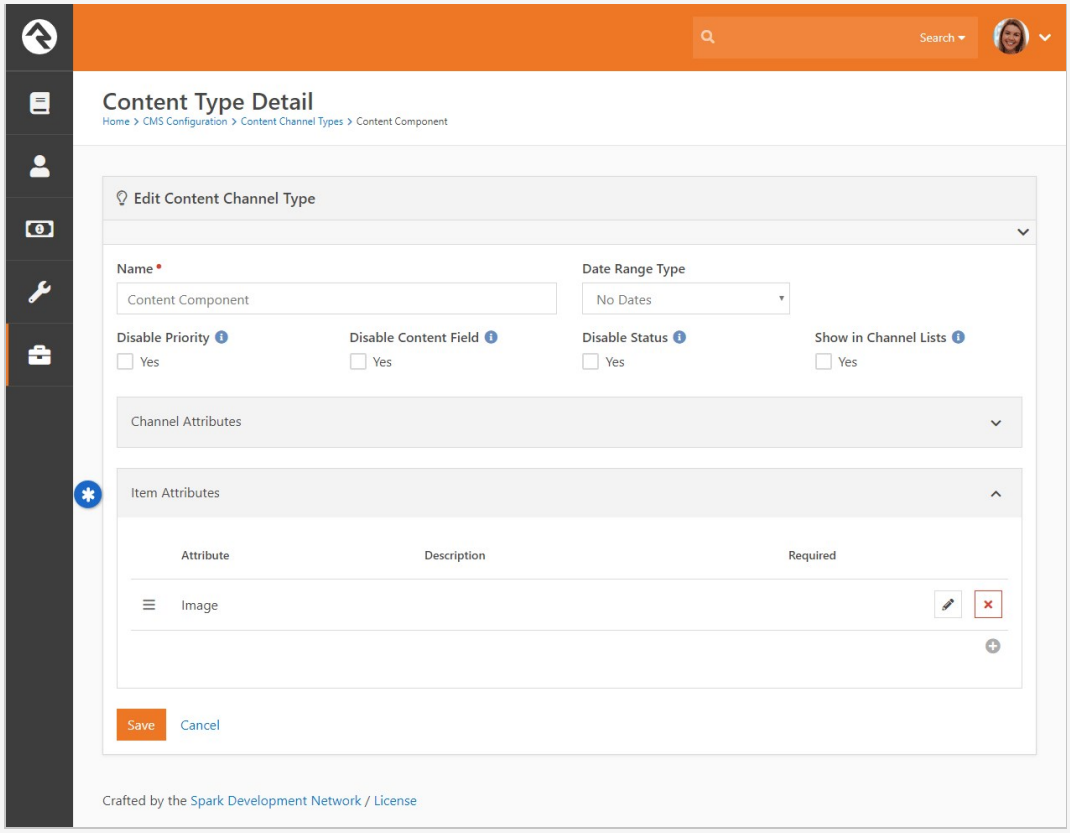
Next, select "Content Channel Item" as the *Entity Type*.

Content Component Attribute Categories



Now, add attributes to your newly-created category by going to `Admin Tools > CMS Configuration > Content Channel Types` and editing the *Content Component* entry to access its *Item Attributes*.

Content Component Item Attributes



As pictured above, an item attribute for *Image* is already present. Click the ⊕ icon to add a new Item Attribute.

When adding the new Item Attribute, use the *Categories* field to select the Content Component Template on which you'd like the attribute to appear. The rest of the setup is the same as any other attribute.

Same Attribute, Different Templates

Making a single attribute available across multiple templates is very similar to the process described above.

First, you'll repeat some of the above steps to create attribute categories for each content component template. Using what ships with Rock, that means adding "Side By Side" and "Card" categories in the same way that we added the "Hero" category. Then, when adding the attribute, you can select multiple categories (instead of just one) and the attribute will appear for each template according to your selection.

This method is the preferred way of adding attributes because it avoids duplication and prevents unnecessary attributes.

Adding an Attribute for All Content Components

Making an attribute available for all content components is easiest of all. Just like the scenarios described above, you'll start by navigating to `Admin Tools > CMS Configuration > Content Channel Types`. Edit the *Content Component* entry to access its *Item Attributes*.

Then, add a new attribute by clicking the ⊕ icon as described above. The only difference here is that you'll leave the *Categories* field blank. Because a *Category* isn't specified, the attribute will be available for use with any template.

Managing Dynamic Content

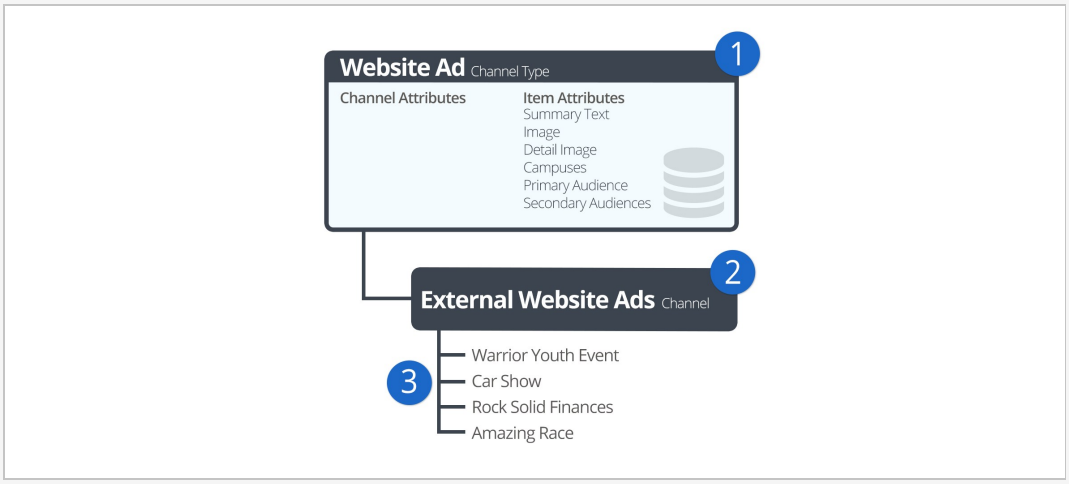
Rock's advanced dynamic content tools allow you to extend the application without having to write any code. That’s kind of a big deal, right? You can customize Rock for your organization without any programming knowledge!

You may have already read a bit about content channels in the `Admin Hero Guide` and `Event & Calendar Guide`. We're going to talk about how to manage content that is added to content channels, then dive into how to set those content channels up. But first - a quick overview of the components that make up Rock's dynamic content features.

Components of Dynamic Content

Rock's dynamic content tools are made up of three components.

Dynamic Content Diagram



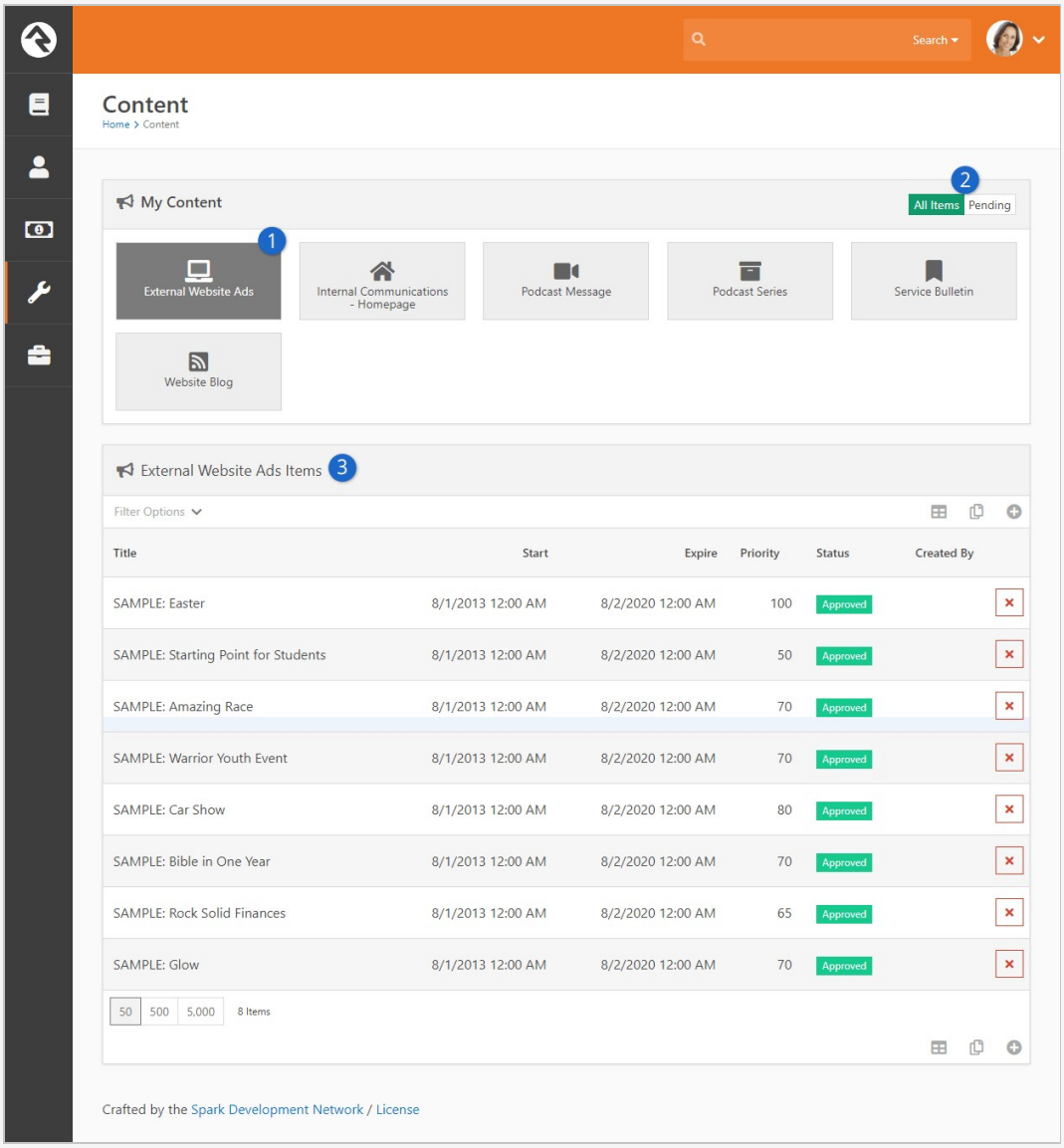
1. **Content Channel Types**
   Channel types define the structure for the dynamic content tools. They define what attributes are available on both the channels and content items. Rock ships with the following channel types: *Website Ads*, *Bulletins*, *Blogs*, *Podcast Messages*, *Podcast Series*, *Universal Date Range Channel Types*, *Universal No Date Channel Types* and *Universal Single Date Channel Types*.
2. **Content Channels**
   Content channels are implementations of the channel types. For instance, because there is a channel type of *Blogs*, you can make blog channels for the organization's website, a specific person and/or a specific area of your organization.
3. **Content Items**
   These are the specific data elements that make up a content channel. For a blog channel these would be the specific blog posts; for the website ads channel these would represent the specific promotions.

Now, let's jump right into adding and managing content items.

Managing Content Items

While it's possible to add new content items on the channel configuration page (`Admin Tools > CMS Configuration > Content Channels`), most of your staff won't have access to these screens. For staff, it's easier for them to add their content under `Tools > Content` . On this screen they will see a list of each content channel they have *View* access to. Clicking one of the items will display the content items for that channel.

Content Channels

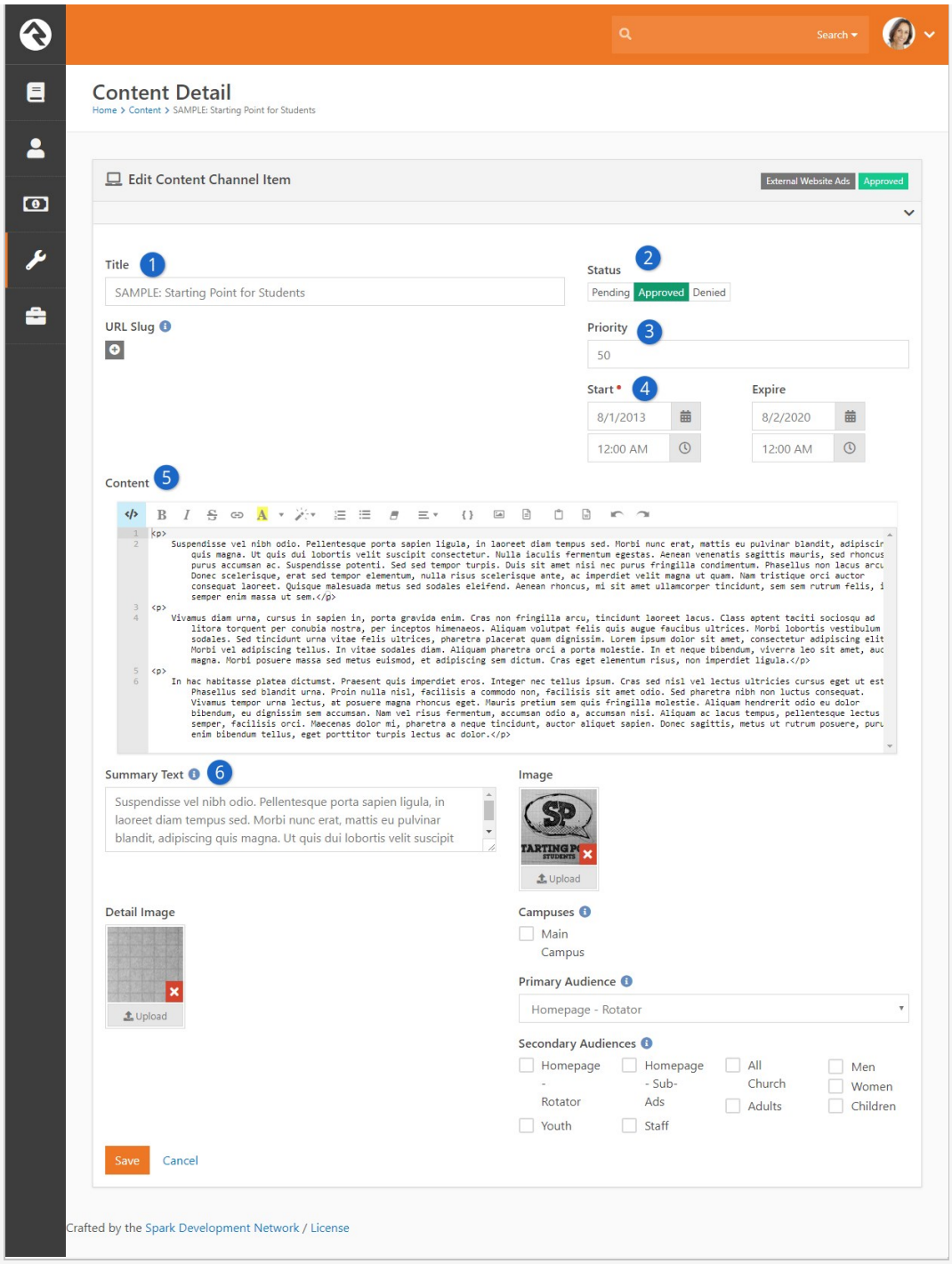


1. **Content Channels**
   List of the content channels that the current user has *View* rights to. A count of the number of *Pending* items is displayed in the upper right corner of the channel.
2. **Display Toggle**
   Toggle switch to display all content channels, or only those with pending items.
3. **Content Items**
   A listing of all content items in the channel with the ability to filter by status, date range or title.

Adding Content Items

To add a new content item, click the ⊕ button in the grid footer. This will bring up the add/edit screen pictured below.

Adding Content Item



1 **Title**
The title for the content item.

2 **Status**
If approvals are enabled for the channel and the user has *Approval* rights, they will be able to set the approval status.

3 **Priority**
The channel defines if the content items have a priority. If it's enabled, you can set the priority here.

4 **Dates**
Dates associated with the content item are defined here. The content channel type determines what date options are available (Single Date, Date Range or No Dates)

for the item.

5 **Content**
Every content item, no matter what type, has a content field. The channel can determine if this field should use the HTML editor or the code editor.

6 **Summary Text**
A short description of the item.

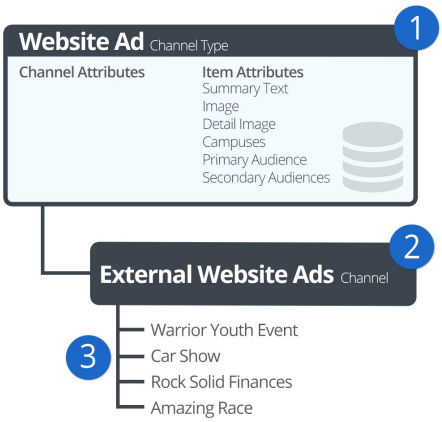
OK, now that we have an idea of how dynamic content works, let's take a closer look at content channels and content channel items.

Content Channels

Rock's static content tools are great. We've already seen how we can customize our messaging using the HTML editor. Sometimes though, you still need the ability to add structured dynamic content to your site. In the old days that meant firing up a development tool and writing your own code. While custom coding is certainly an option in Rock, in many cases it's simply not needed.

Let's take a look at how Rock's dynamic content tools can have you extending Rock in no time (and without learning C#). Here are the three main components we'll review:

Dynamic Content Diagram



1. **Content Channel Types**
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2. **Content Channels**
   Content channels are implementations of the channel types. For instance, because there is a channel type of *Blogs*, you can make blog channels for the organization's website, a specific person and/or a specific area of your organization.

3. **Content Items**
   These are the specific data elements that make up a content channel. For a blog channel these would be the specific blog posts; for the website ads channel these would represent the specific promotions.

Channel Types

The first concept we'll discuss is channel types. As you work on your site, look for repeating data patterns. Items like web promotions are well-structured having data items like *title*, *image*, *summary text*, *intended audience* and *content*. While you could edit all of this content with the HTML editor, hopefully you can already see how that would be very tedious and prone to error. Here's where content channel types come into play.

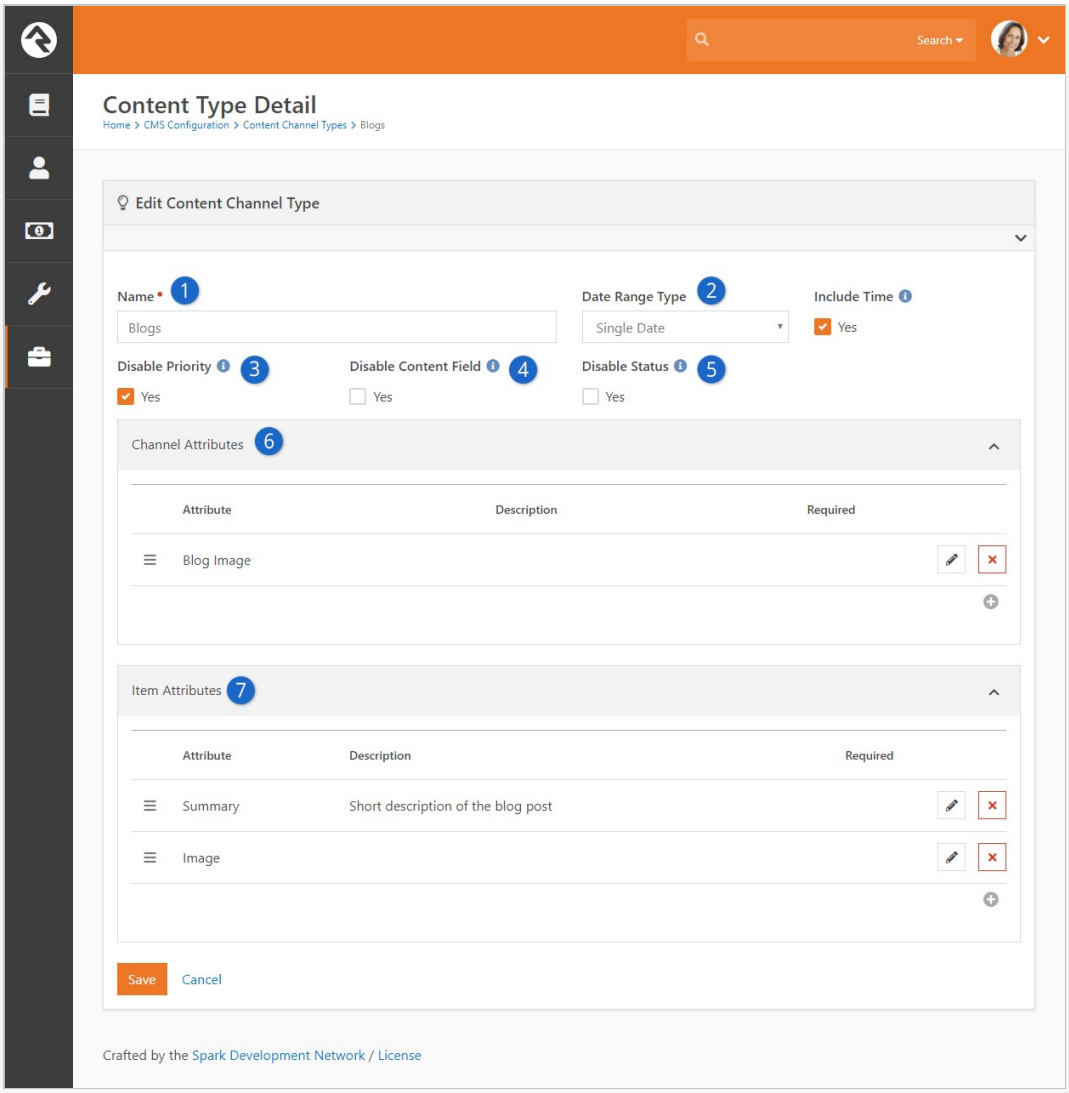
Content channel types help define reusable data structures (think of a container for specific types of data). Rock ships with a couple of these channels already defined. Let's look at each one to see its role and purpose:

- **Website Ads:** This channel type is used to help manage your website promotions. It allows your staff to enter promotion information that your website administrator can approve, with the option to edit, and then publish to the site.
- **Bulletins:** This content type is used to help manage the bulletin creation process.
- **Content Component:** Gives web designers a great tool to control the look and layout of content on a page while allowing content creators the ability to create this structured content on-the-fly directly on the website.
- **Blogs:** The blog content type is useful to build blogs for your organization.
- **Universal Channel Type:** This is a unique and powerful tool to help you from having to create 'One-off' channel types. We discuss this channel type in more detail below.

Anatomy of a Content Channel

As we mentioned before, the role of the content channel type is to define the container and settings for a particular type of content. Let's walk through the administration screen found under `Admin Tools > CMS Configuration > Content Channel Types`.

Content Channel Type



1 **Name**
The name of the content channel type.

2 **Date Range Type**
The individual content items that are added to the content channels can be valid for a specific date (for example a blog post would have a specific publish date) or a date range (a web promotion ad would be valid for a range of dates).

3 **Disable Priority**
Some content items might have the concept of priority, while others may not. For instance, a web ad might be low priority (which would limit when and how it's shown), while a blog post would not need to use the concept of priority. This setting allows you to turn the need for priority on or off.

4 **Disable Content Field**
This option allows you to disable or hide the content field, which can be really helpful if you want to simplify the screen view as you build your channel, or if you want to create a kind of blank template using only attributes.

5 **Disable Status**
This option allows you to bypass the status and treat all content as "approved".

6 **Channel Attributes:**
This section allows you to define attributes that relate to the channel. For a blog channel this might be something like *blog description*, *author*, or *image*. Channel

attributes aren't as common as item attributes; so don't worry if you have a hard time coming up with any.

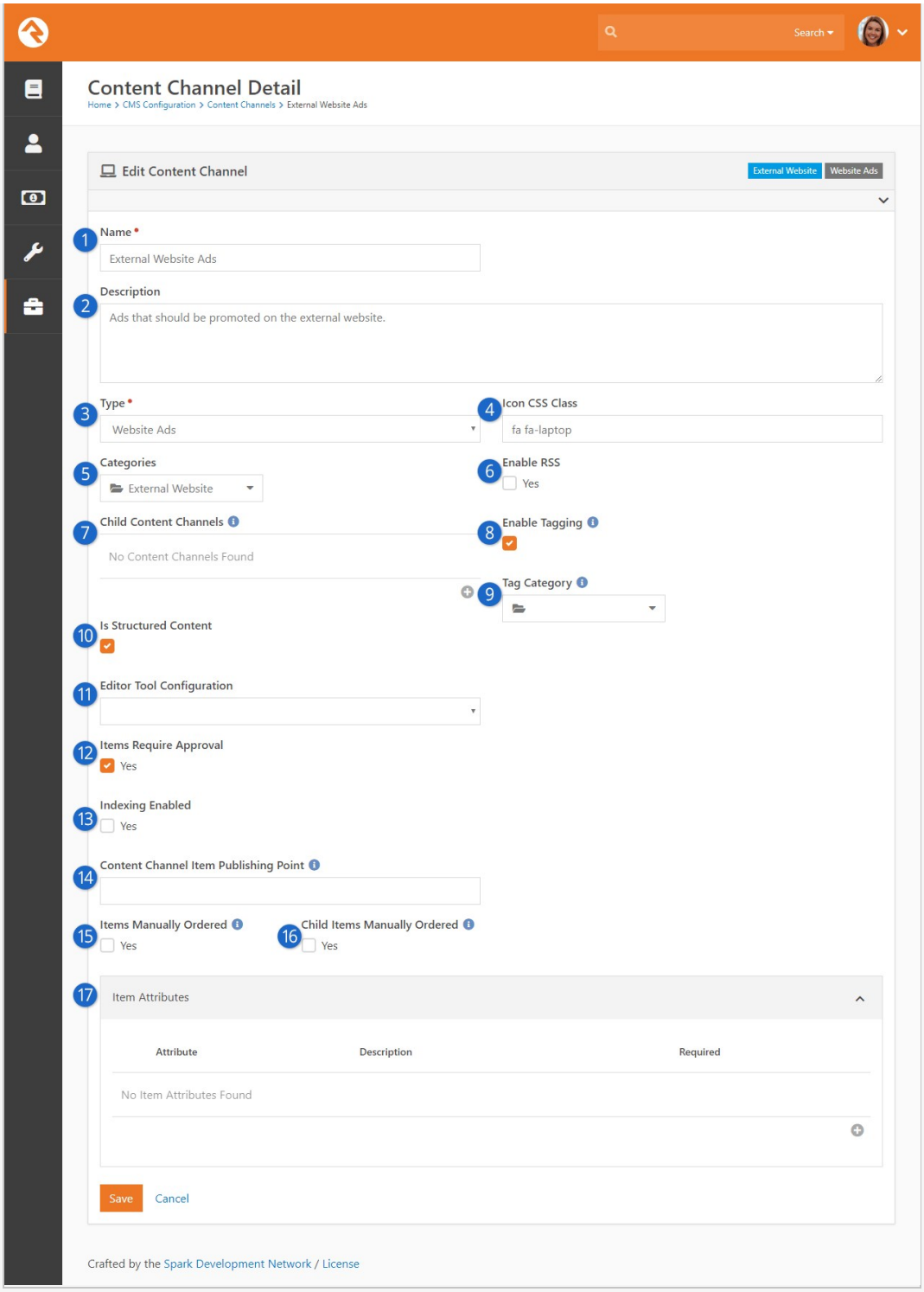
7. **Item Attributes**
   Item attributes apply to each content item that is added to the channel. Each content item does get a date (either a single or date range depending on the *Date Range Type* discussed above) and a content field. Any other bit of information you want to track for the content item will need an attribute to store it. For example, the website ads channel has the following item attributes:
   - Summary Text
   - Image
   - Detail Image
   - Campuses
   - Primary Audience
   - Secondary Audiences

Content Channels

If content channel types define the structure, content channels represent the implementation. Here's an example: you might have a channel type of *Blog* and channels *Pastor Foster's Blog* and *Rock Solid Church's Blog* that implement this type. You might be wondering why channel types are even needed. The answer is that they help enable reuse. In our blog example above, if you didn't have channel types you would have to define the structure every time you wanted to create a new blog - yuck!

Create a new channel under `Admin Tools > CMS Configuration > Content Channels`.

Add Content Channel



1 **Name**
The name of the channel should be descriptive but not too long.

2 **Description**
A description of the channel. This description is available to be displayed on the page.

3 **Type**
The content channel type that this channel is implementing.

4 **Icon CSS Class**
A CSS icon class to be used on the various internal entry and administration

screens.

5. **Categories**
   Add categories so you can group and organize your content channels according to how they're used. Navigate to `Admin Tools > CMS Configuration > Content Channel Categories` to add the categories you need for your content. Like other entities, a channel can be in more than one category if it's needed in different areas.

6. **Enable RSS**
   This setting enables the channel's RSS features. This allows the content items to be published to an RSS feed that can be consumed by an individual's RSS aggregator or another software system that supports RSS integrations.

7. **Child Content Channels**
   If content channel items are allowed to have child items this setting determines which content channel those items are allowed to be from.

8. **Enable Tagging**
   Select this option if you'd like to allow the items in this content channel to be tagged.

9. **Tag Category**
   If you select Enable Tagging, the Tag Category dropdown menu is displayed, allowing you to select which category of tags you want to use to identify the items in this content channel.

10. **Is Structured Content**
    Select this option to use *Structured Content*, instead of the HTML or Code editors, to add your content. To get a little technical, *Structured Content* stores its data as structured JSON, allowing for a richer JavaScript editor to be used when adding content channel items. We'll talk more about adding content in the Content Channel Items section below.

11. **Editor Tool**
    What you see here will change based on your *Is Structured Content* selection. This is where you'll select the editor that will be used to add content to channel items. More on that below.

12. **Items Require Approval**
    Depending on your use case, you might want content items to require approval before they are displayed. This setting allows you to define this on a per channel basis.

13. **Indexing Enabled**
    Select this option if you'd like the content channel to be indexed.

14. **Content Channel Item Publishing Point**
    If you want to provide a direct link to the content channel, you can enter the URL into this Lava-enabled field.

15. **Items Manually Ordered**
    Many times content channel items will be ordered by date. Sometimes though, you'll want to manually order them. This setting enables manual ordering.

16. **Child Items Manually Ordered**
    This setting determines if child content channel items should be manually ordered.

17. **Item Attributes**
    Content channels inherit all of the item attributes defined by the channel type. There maybe times when a specific content channel needs to add a new attribute specific to it's implementation. You can add these new attributes here.

Content Channel Tags

Just as you can tag people in Rock, you can also use tags to help identify and categorize content channels. One small difference, though, is only organizational tags can be used with content channels (as opposed to personal tags), and those tags must belong to a category specified when the content channel is configured.

Let's take a closer look at how to set this up.

1. The first thing you need to do to start using tags with content channels is set up tag categories. Categories are created in the Category Manager, found at `Admin Tools > General Settings > Tag Categories`. Create as many categories as you want. Once a category is created you will need to add a Role to the security under the Tag section for each. Otherwise added tags in that category will not be saved.

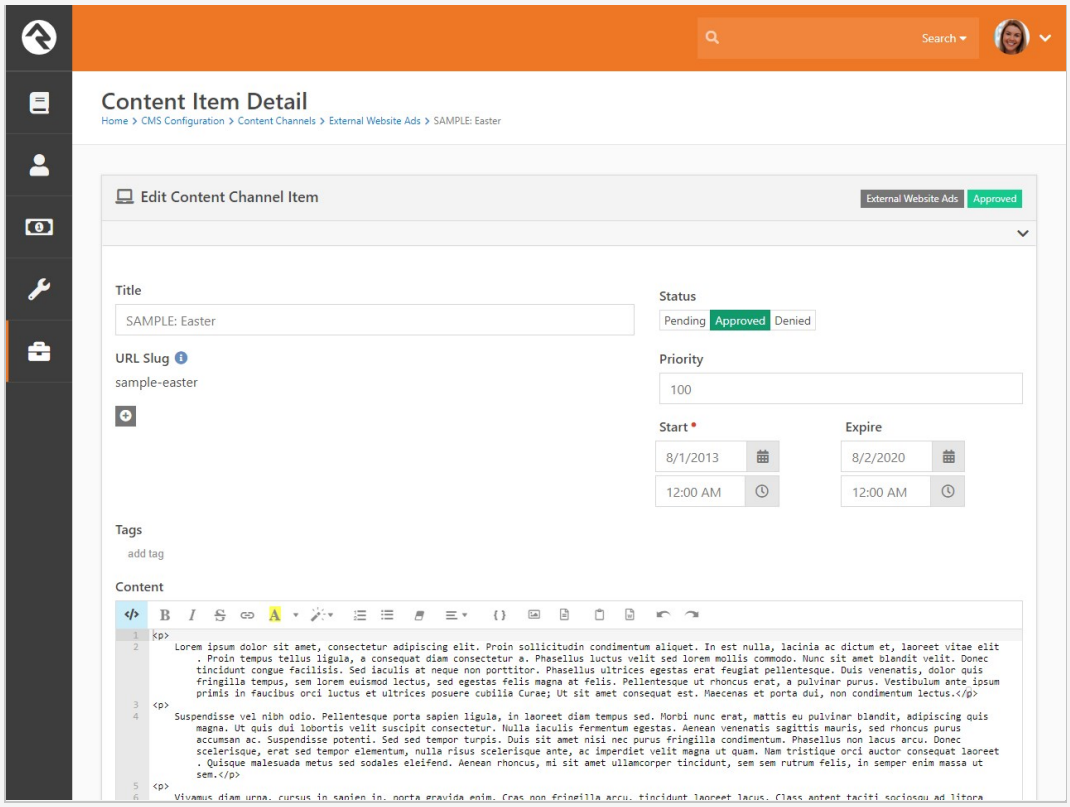
> ### Using Categories
> Each category will have a list of tags. Say you have a "Sermon" category and a "Podcast Sermon" category you would create two tags for each category. Tags are all about how you want to organize your Content Channel's. The power is in your hands to create the categories the way it makes sense for your organization.

2. The next step is enabling tagging in your content channels. Select the content channel you want to tag from the list found at `Admin Tools > CMS Configuration > Content Channels`, and click `Edit` to modify its configuration. Check the Enable Tagging box, then select the categories you'd like to be available for the content channel.

3. The final step is creating the tags you'll use with your content channel items. You can create as many as you need. Tags are created in the Tags screen, located at `Admin Tools > General Settings > Tags`. For each tag you create, use the Entity Type of "Content Channel Item" and select "Organizational" for the Owner. Leave the Qualifier Column and Qualifier fields blank. Alternatively, you can add tags directly from the content channel. You will be able to view and edit those tags in the general settings after they've been created if need be.

Now that your categories and tags are set up, you can add tags to content channel items. Simply type the tags you want to use in the "add tag" area of the Content Detail screen and click `Save` when you're done.

Content Detail



> **Block Settings**
>
> You can create a page dedicated to viewing all your content channel tags using the block settings.

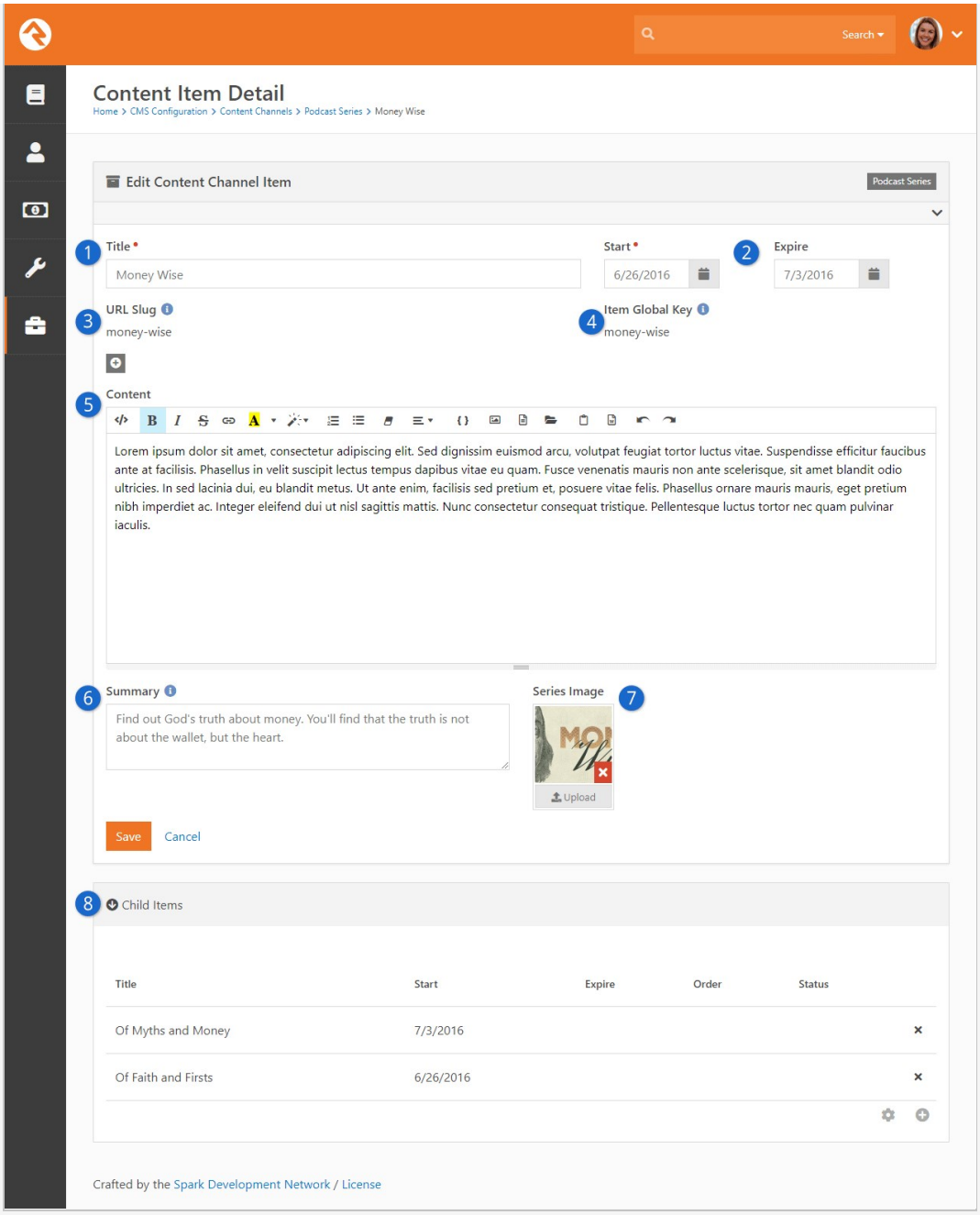
Content Channel Items

Once you have your channels set up, it's time to bring it all together and add some content. This is done by adding *Content Channel Items* to your *Content Channel*. If your channel is a blog, then the channel item would be a single blog post. You can add items in one of two ways:

1. You can enter content right on the `Admin Tools > CMS Configuration > Content Channels` screen under the channel details by adding a row. This is more of an administrative screen.
2. Specific content entry pages can be found under `Tools > Content`. These are the pages that your staff can use to enter content, and your communications team will use to approve and manage entries. These screens are covered in the `Communicating with Rock` manual in detail.

The example pictured below is a sample content channel item entry for a Podcast series. The fields you see on this page may vary according to your configuration as described in the prior sections.

Content Channel View Configuration



1 **Title**
This is the title of the content item.

2 **Start and Expire**
Items will only appear in the content channel on or after the Start date. You can optionally set an Expire date to automatically remove the item in the future.

3 **URL Slug**
You can add one or more slugs to customize the URL of the item. URL slugs are unique to each content channel. This means you can use the same slug on items in different content channels without causing conflicts. However, you can't use the same slug on multiple items within the same channel.

4 **Item Global Key**
The *Item Global Key* is automatically generated when you save, using the title of the content channel item. The value can be re-generated if the item title is changed.

5. **Content**
   In this case we selected the *HTML Editor* option when setting up the channel, giving us this editor. From here you can manually switch to the *Code Editor* by clicking the </> icon. If *Is Structured Content* was selected in the channel setup, this area will look different but you'll have many of the same tools.
6. **Summary**
   This field is an attribute that was added to the content channel setup. Each item added to the channel will have a summary field like this one.
7. **Image**
   Like the *Summary*, this is also an attribute. From notes to pictures, there's a lot you can do with content channel item attributes.
8. **Child Items**
   You can add child items here, as allowed by the channel's setup.

The Universal Channel Type

As you start brain-storming ideas for using content channels you'll find yourself needing to create one-off channel types that will be used by a single content channel. For instance, when we set out to create the Lava documentation we first needed to create a new channel type called 'Lava Channel Type'. We could then add a new content channel 'Lava Documentation' that implemented that type. Creating the type for use with a single content channel was wasted effort, especially since content channels can add their own item attributes.

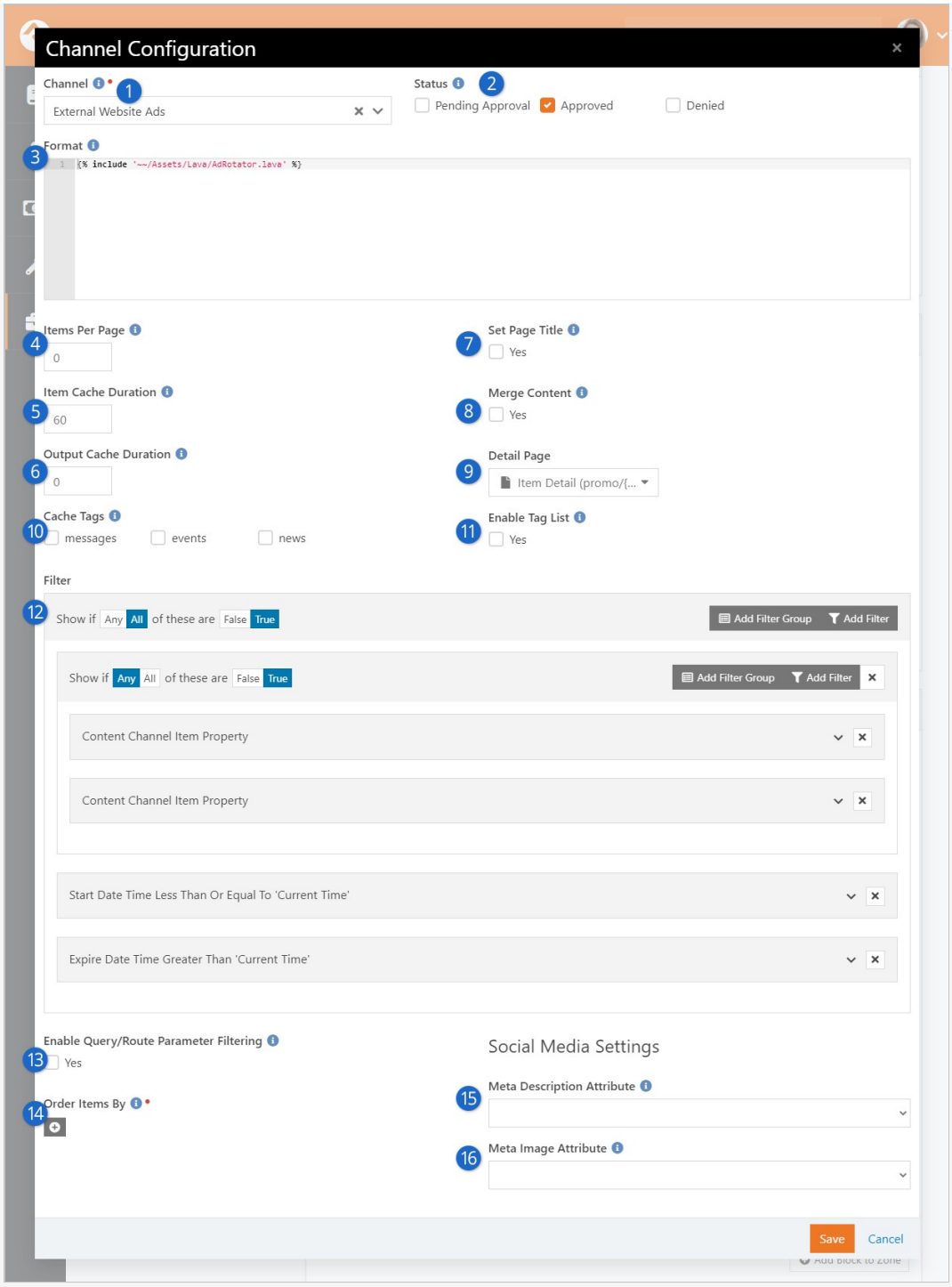
Hence the generic *Universal Channel Type* was born. This channel type is a generic type that you can use to build your one-off content channels from. It has no attributes defined so your channel will define all of the item attributes you need. No wasted effort.

> ### No Magic Here...
> There's nothing special about the Universal Channel Type. We created it to save you time and also provide a consistent (well known) type that we (and plugin developers) can use to add new content channels from in the future. Yep... we're always thinking ahead!

Showing a Channel on a Page

Now that you understand how to create content channels and items, the next step is presenting this data out to your external website. The main block you will use to format channel content is the *Content Channel View* block. Adding this block to a page zone will allow you configure the following settings:

Content Channel View Configuration



1 **Channel**
The content channel you would like to display on the screen.

2 **Status**
The content item status to filter on when creating a list of content items.

3 **Format**
This is the Lava template selected to iterate through when displaying content items on the screen. See the `Rock Lava` documentation for tips and tricks on using Lava in Rock.

4 **Items Per Page**
The number of items to make available for the Lava template.

5. **Item Cache Duration**
   Rock can cache the items returned from the database to help improve performance.

6. **Output Cache Duration**
   Rock can cache the page output as well. This improves speed, but is best used for non-personalized information. (You don't want to display a wrong name because the page is displaying cached output!)

7. **Set Page Title**
   This will set the page's title based on the channel content. By default, it will display the channel name. If the query string contains an item id (in the format of Item=1) then that item's title will be used for the page title.

8. **Merge Content**
   When this setting is enabled, the block will look for Lava fields in your content and attributes. Then, it will compile and render the Lava. This allows you to put Lava logic in your actual content. Think of the power of having blog posts that can actually be dynamic to the user reading them!

9. **Detail Page**
   This setting allows you to define the detail page to add as a Lava merge field. This allows your Lava template to link to the detail page.

10. **Cache Tags**
    Cache tags are used to link cached content so that it can be expired as a group. We have a whole chapter on creating and using cache tags below.

11. **Enable Tag List**
    You can add organizational tags to your content channel items as described above. As of Rock v11.1, you can enable this setting to control the display of content channel items by their tags in the Lava template (the *Format* field described above). Click the help tip ℹ icon for this setting for details on the Lava. Enabling this setting also lets you use a query string parameter of `?Tag=tagname` to filter the content channel items.These tags are used in addition to, and not in place of, any filters (see next item below) you have configured.

12. **Filter**
    The content filter is very similar to the data view screens. This section allows you to filter by any attribute or property of the content item.

13. **Enable Query/Route Parameter Filtering**
    When this setting is enabled, the block will try to determine the content item to display based on a query string or route parameter value (other than the default 'Item' parameter). For example if you set this property and then include "?Title=Car Show" in the url, the block will look for an item that has a *Title* of 'Car Show'. You can also add an item attribute for your channel ("slug", for instance) and include that attribute in the route to this page (series/{slug}, in this case).

14. **Order Items By**
    Allows you to set the display order of the content items.

15. **Meta Description Attribute**
    This setting allows you to pick an attribute to use for the meta description tag in the page header. This description is used when people share the page on social media.

16. **Meta Image Attribute**
    Allows you to set the page's meta image tag in the header to the select image attribute defined on the content channel.

But Wait... There's More

The settings above provide a ton of capabilities when adding dynamic data to a page. This block can also respond to specific query string parameters to alter its behavior. Let's look at each of them:

- **Item:** If you pass in an item's numeric id, the block will only load that specific item into the Lava merge fields. The query string parameter you add to the end of the URL would look something like `?Id=27`.

- **Page:** If you have more items than fit on a single page, you can navigate between pages using the *Page* query parameter. Simply pass in the page number you wish to display, like `?Page=2`. If you pass in a page number beyond the last page, the last page will be shown. If the page number is less than 1, the first page will be displayed.

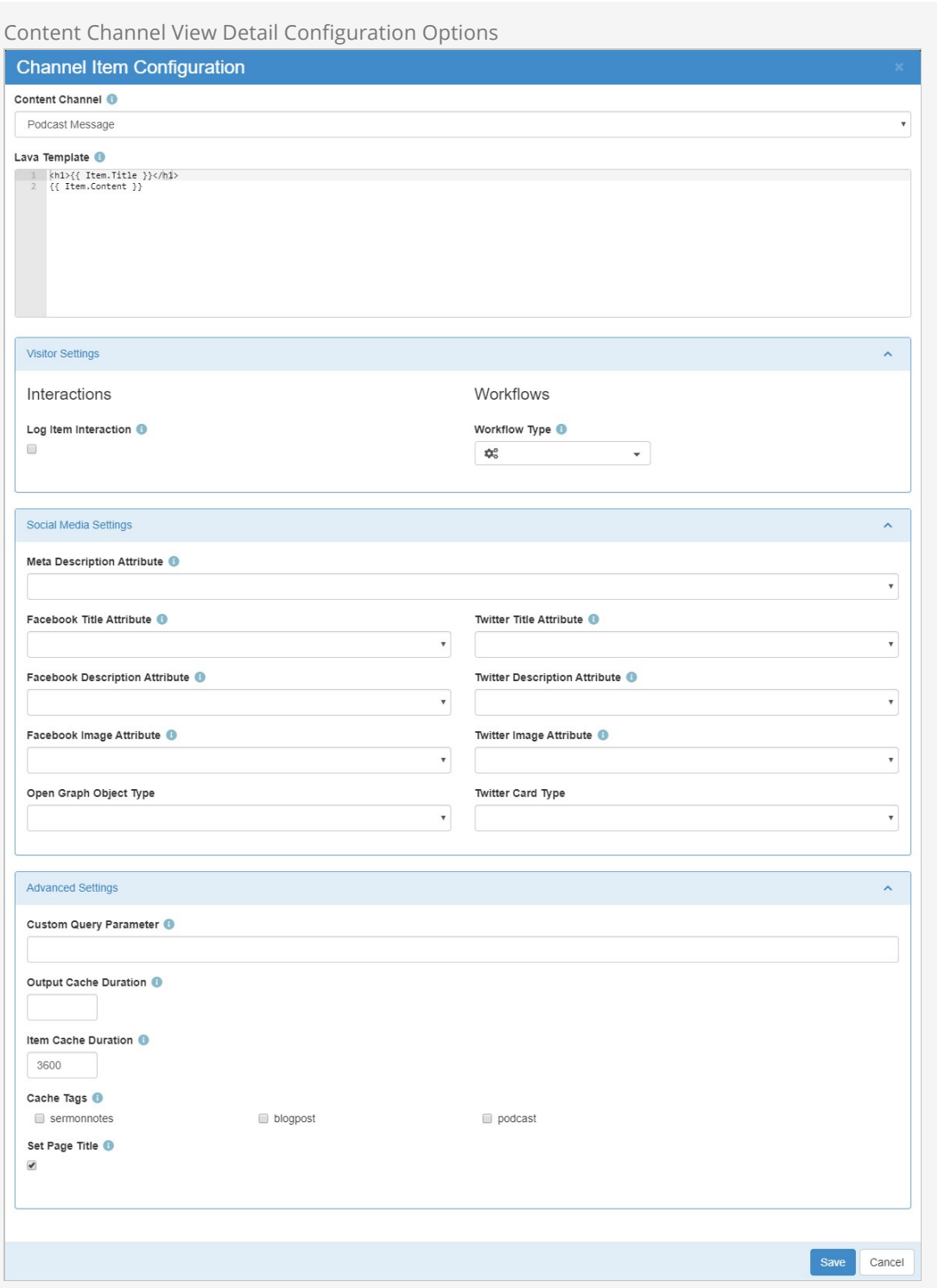
- **Attributes:** Content channel items can have attributes, and you can reference those attributes in the query string parameters. You'll use the attribute's *Key* and *Value* to do this. For instance, let's say you have an attribute indicating the general topic of content channel items. If you just want to see items related to "Finances" then your query string might look like `?Topic=Finances` (or `?Topic=2` if the attribute is a single/multi-select field coded with numeric values).

  Rock also supports passing in multiple values for Defined Value attributes that have 'Allow Multiple' enabled. In that case, the value you want in the query string parameter will be the GUID of the Defined Value you're looking for. Multiple values (i.e. multiple GUIDs) can be separated by a comma in the query string. This will return any items that have at least one of the provided values.

Showing a Single Item on a Page

Your *Content Channel View* block is great for showing all of the posts in a channel, but what about a block to show a single content item? You can use the Content Channel View block and use an ID or Title parameter, but we really want more SEO-friendly URLs. Enter the *Content Channel View Detail block*, which brings you this and more.

Content Channel View Detail Configuration Options



This block gives you the option to "lock" it to a specific channel so that you can have a sermon series called "Moneywise" and a blog post titled "Moneywise" without having to worry about your pages getting confused about which item to show. To limit its search to a single channel, simply specify the *Content Channel* in the top input.

The *Lava Template* is the template which will be used to determine what shows up on the page. Initially, this will simply show the title of the item and the content below, but you can get really detailed in specifying how this page will be laid out. Using the `Item` object, you can access the properties and attributes of your content item for display on the page and even provide links to

other pages.

In the *Visitor Settings* section, you can choose whether an interaction is logged every time someone views an item on a page with this block. You can also specify a Workflow Type that should be launched whenever this block is used to show an item. (The workflow will be passed a *Person* entity which you can use to store the person who viewed the page (if they're logged in). If your workflow has a *Content Channel Item* attribute with a key of `ContentChannelItem`, that attribute will be automatically filled in as well. You can use that attribute to discover which item they viewed, and optionally perform different actions based on that information.

The *Social Media Settings* section will let you link any item attributes you added to the channel to special meta tags on the page. For instance, if your blog post has an image they've provided in an attribute, you might want that image to be shown on the preview that appears in Facebook when someone shares your post there. But you might want to ask your post author to provide a different image for Facebook than the image for Twitter, so you can use these fields to specify which attribute will be used for each social network.

Finally, in *Advanced Settings*, you can specify what this block calls a slug, if you use that parameter in the URL. For example, if you wanted to provide a URL with `?sermon=MoneyWise` at the end instead of `?slug=MoneyWise`, you could type "sermon" into this box and it would look for an item with a slug matching the "sermon" parameter in the URL. (Of course, using parameters like this would break the SEO friendliness that this block was designed for, so it would be an unusual case that you would want to put anything in this field). Usually you'll just want to access the page using an address like "/sermon/MoneyWise" which would match a Page Route of `sermon/{slug}`.

You can also specify whether the output and the item content itself is cached to speed up page loads. You can also allow the item being viewed to set the page title so that your users aren't seeing a generic title like "Our Sermons" when they load a page that is showing a sermon called "Our Cloud of Witnesses".

Tips and Tricks

Below are some tips and tricks to help you maximize your usage of dynamic data:

- When you enable the ability to use Lava in content items, be sure that your Lava is set up to display data when the current user or other merge items are not available. When the content is made available via RSS, many of the merge fields will not be available.
- The RSS feed for a channel can be linked to from the address: *http://yourserver/GetChannelFeed.ashx?ChannelId=N* where *N* is the channel id.

Publishing Content Through Feeds

Once you enter your content, you may want to make it available through feed systems like RSS. Rock provides an endpoint that allows you to push your content in this way. The URL for this end point is:
http://yourserver.com/GetChannelFeed.ashx?ChannelId=X

The only required parameter is the ChannelId of the channel you want to publish. This channel must be configured to *Enable RSS* for the feed to return content.

The structure of the feed is defined by a Lava template. The RSS template is used by default, but you can create and configure additional templates to suit your needs. These templates are managed under `Admin Tools > General Settings > Defined Types > Lava Templates`. Once you create a new template, you can enable it by placing the *TemplateId=* parameter in the query string. The TemplateId will be the Defined Values Id. Note that the defined value can also set the MIME type that should be used with the template.

Other query string parameters you can pass into the handler include:

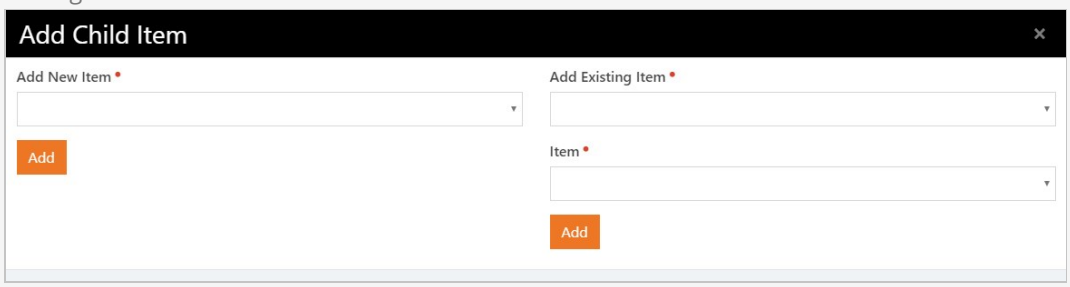
- **Count:** Limits the number of content items to return. The default value is 10.
- **TemplateId:** The defined value id of the Lava template you wish to use.
- **EnableDebug:** If present on the query string (with any value), the feed will output all available merge fields for you to view.

Child Content Channel Items

Content channel items can have child items. These child items can be from other channels. For instance, the podcasting feature in Rock uses this capability. The 'Podcast Series' content channel items are configured to have child items from the 'Podcast Messages' content channel. This concept is powerful as it allows the series items to have their own attributes and settings, yet they can work together to create robust applications.

When adding a child content channel item, you have the ability to select an existing item, or to create a new item. This is helpful as it minimizes the amount of clicking required to add child items.

Adding A Child Item



Keep in mind that a single channel item can have more than one parent. Child items can also have their own children. The sky's the limit on what you can create.

Working With Images

Rock provides several ways to store and display images. Picking the right solution for your requirements is important. The two most common ways to store images are discussed below.

- **Image File Type** - This is was the only way to store photos originally. It's still often the best way if you need to secure images so that only certain people can view them (cough check images) or if you want to provide dynamic transformations on the images. We discuss image file types in more details below.
- **Image Assets** - You can also use Rock's Asset Manager to upload images. This is the preferred way to manage images for your website. This option doesn't allow for security but it is MUCH faster than the image file type in most cases. Since most images for your website don't need security this is the best option.

Image File Type

Serving your image files with the right dimensions is the simplest way to improve your website performance, it means less load on your site and faster images for your users. And with Rock, it couldn't be easier!

We think you'll find the information below helpful and straight forward on how to use these tools for your best benefit. Oh, and if you are anything like us you might even find yourself having a little too much fun with your content. So, we will spare you and only go over the primary and most useful commands, know that this is a powerful tool where the sky is the limit.

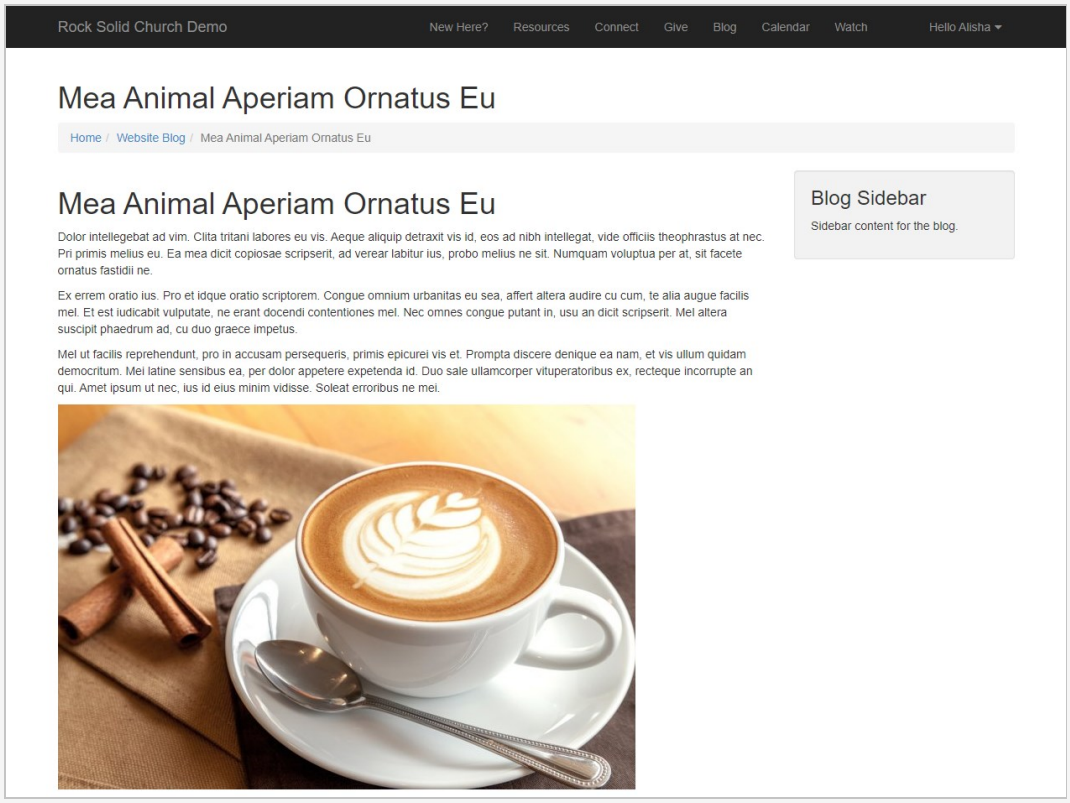
Before anything – you have to set up an image attribute to your content channel or whatever it is you are standardizing such as page attributes.

Alright let's look at an example. Let's say you have a content channel with an item attribute named "Public Photo." Normally in your Lava you would add that image to your mark up like this:

```
GetImage.ashx?Guid={{ detailImageGuid }}
```

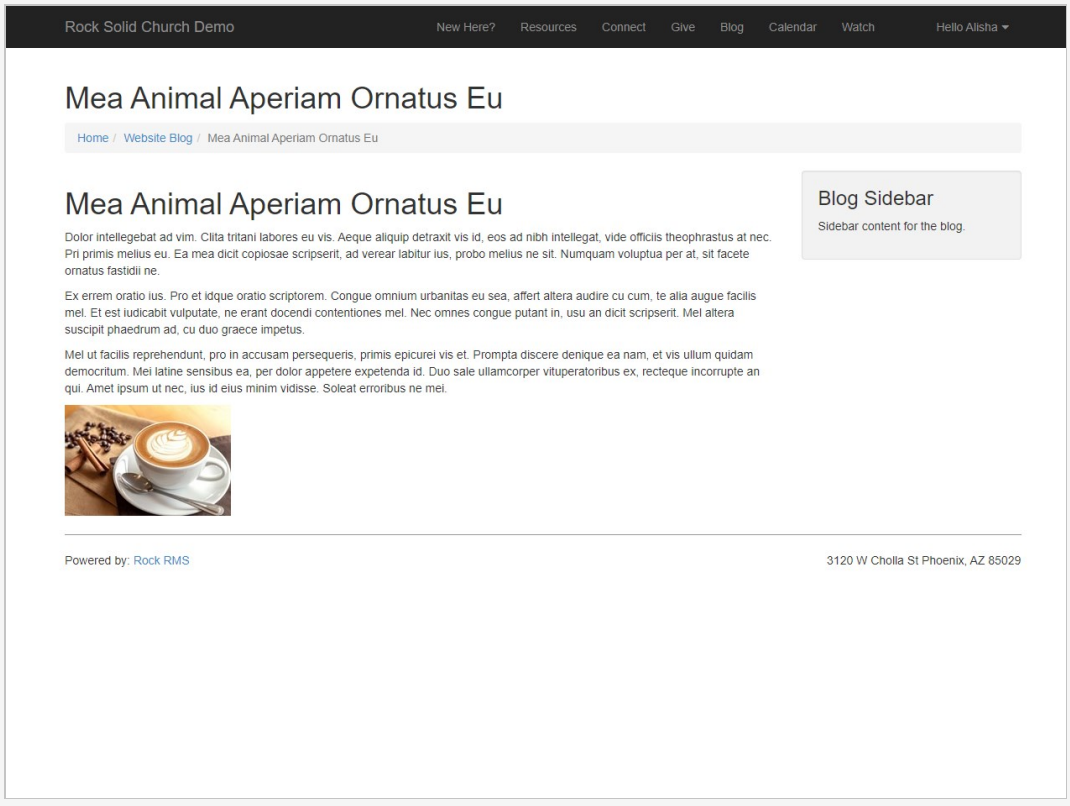
Here we see the original photo without any resizing.

Original File Size



Let's make this image smaller. `GetImage.ashx?Guid={{ detailImageGuid }}&w=468&h=232`

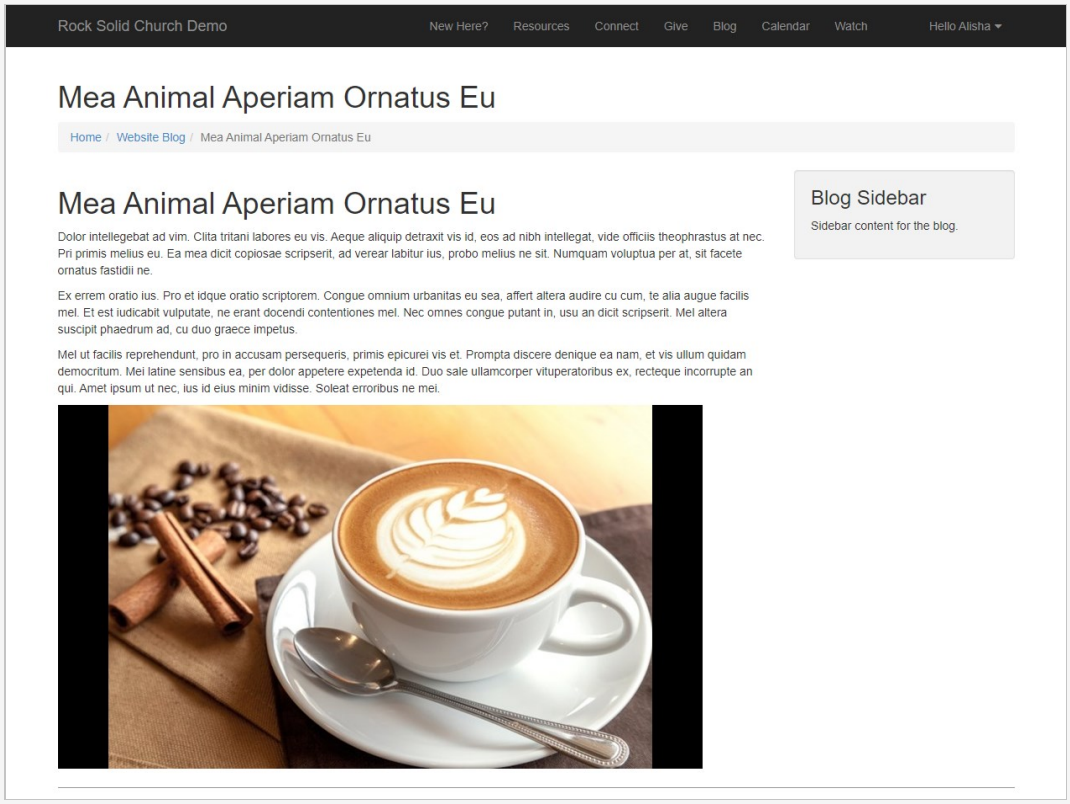
Small size set



Those are super basic. Let's add some extra commands. Say we always want the images to be a certain aspect ratio and if the image uploaded doesn't meet that size then a black border will fill in the rest of the area and the image will align to the top center. our command would then look something like this:

```
GetImage.ashx?Guid={{ detailImageGuid }}&w=768&h=432&mode=pad&bgcolor=black&anchor=topcenter&quality=100
```

Large Size Set With Extra Settings



That's just a glimpse of you can use these tools to standardize your content.

Commands

Width and Height

- `&W=` sets the width of the image in pixels.
- `&H=` sets the height of the image in pixels.

If only the W and H is set, then the aspect ratio of the image is maintained and defaults to the width size.

Modes

`&mode=`

- `max`

Resizes the image to fit within the width and height boundaries without cropping or distorting the image. The resulting image will match one of the constraining dimensions, while the other size is altered to maintain the same aspect ratio of the input image.

- `pad`

Resizes the image to fit within the width and height dimensions without cropping or distorting the image and fills the remaining space with a solid color. Use the bgcolor command to set the color

to fill the space.

- `stretch`

Stretches the images to the W and H parameters regardless of the actual size of the image.

Background Color

`&bgcolor=`

Named colors and hex values are supported.

Alignment

`&anchor=`

The alignment parameter allows you to specify the starting location within the size parameters. Valid values are:

`topleft`
`topcenter`
`topright`
`middleleft`
`middlecenter`
`middleright`
`bottomleft`
`bottomcenter`
`bottomright`

Crop

`&crop=`

Resizes the image to fill the width and height dimensions and crops any excess image data. The resulting image will match the width and height constraints without distorting the image. Cropping is used by coordinates, x1, y1, x2, y2.

Compression and Performance

Compression helps remove unnecessary data from your images, while providing the control you need for high quality at small sizes.

- `format`

The output format to convert the image to. Valid options are `jpg`, `png`, `gif`.

- `quality`

Controls the output quality. Valid values are in the range of `0-100`, and the default is `90`. Quality can often be set much lower than the default, especially when serving high-DPR images.

> **More Info**
> For a list of even more image resizing options, checkout this website: ImageResizer.

Asset Manager System

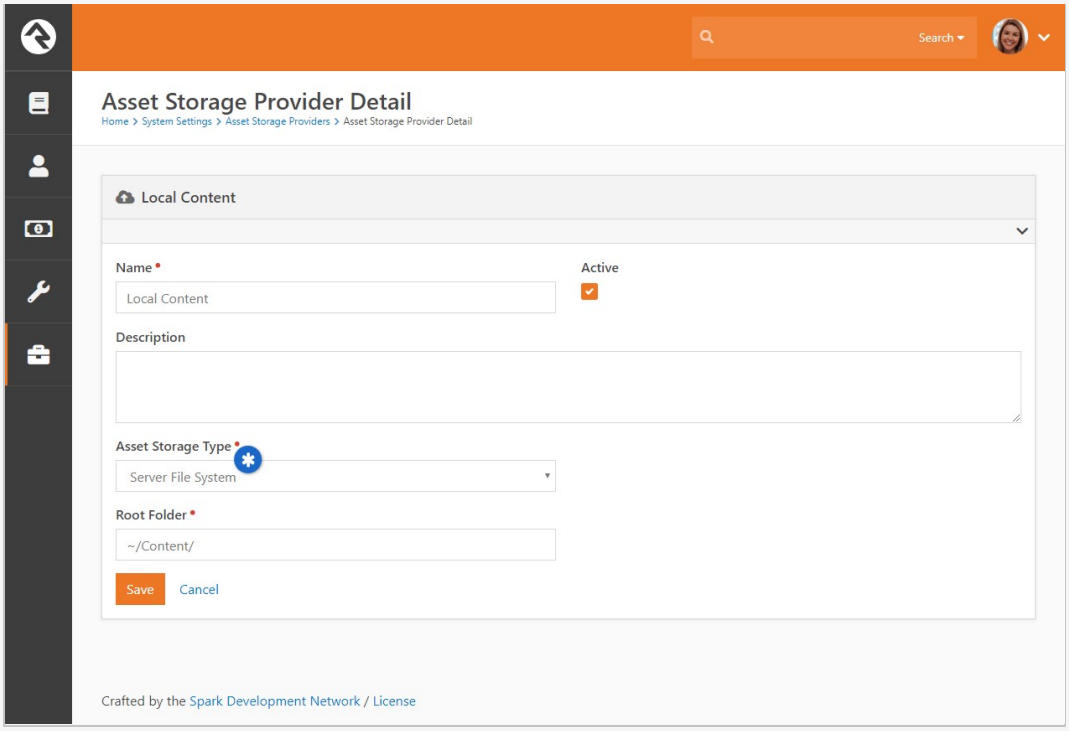
The Asset Management system gives you first class integration between your Rock system and a remote cloud storage system (such as Azure or Amazon S3). With the Asset field type, you can add an attribute to existing things (such as a Content Channel, Person, Group, etc.) and give your content editors the ability to select files and images stored in your cloud accounts.

Storage Provider

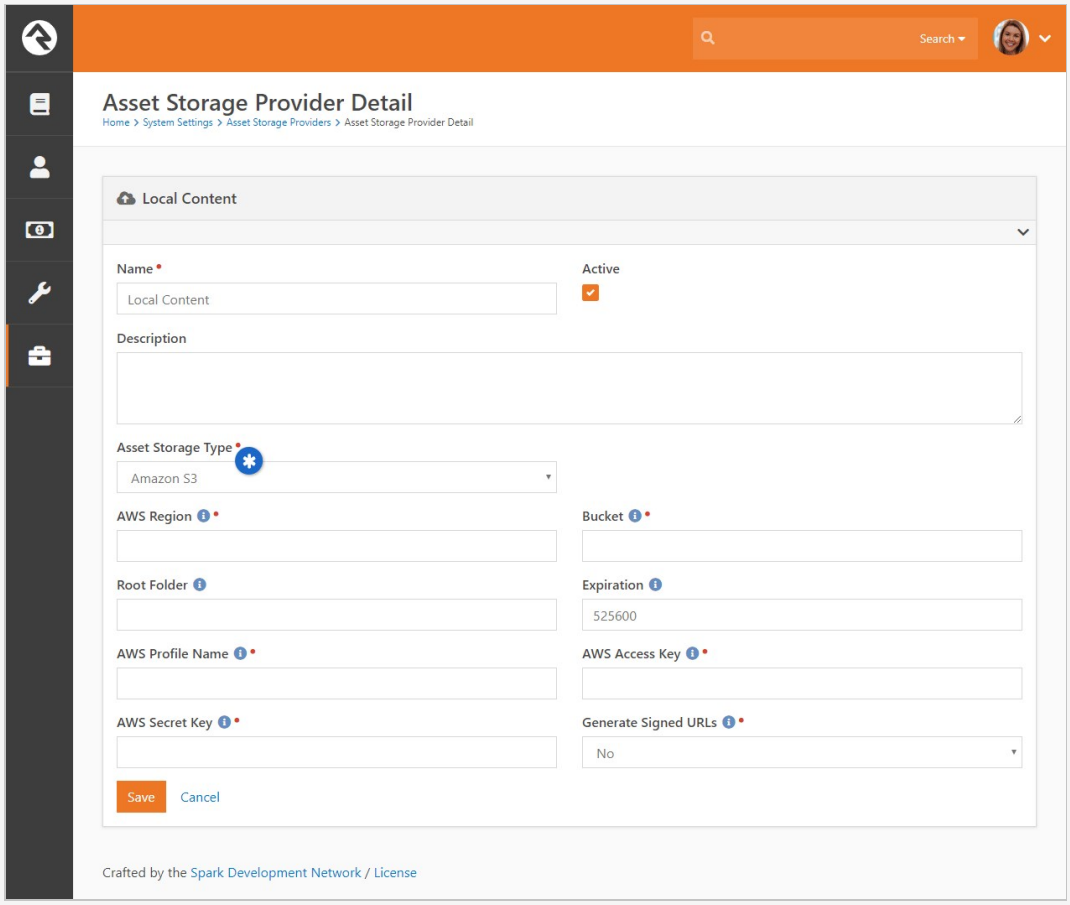
> ### Access
> Before you get started, you'll need to set up your provider. Amazon S3, Google Cloud Storage, Azure Cloud Storage and your local Server File System are currently supported out of the box. More providers may be available in the Rock Shop.

The asset provider is configured under `Admin tools > System Settings > Asset Storage Providers.` This page is where you will configure providers. Depending on the storage type you choose, additional fields will be required as pictured below. This is why it's important to set up your provider first, because you'll need that information to complete the configuration in Rock.

Asset Storage Provider Detail - Server File System



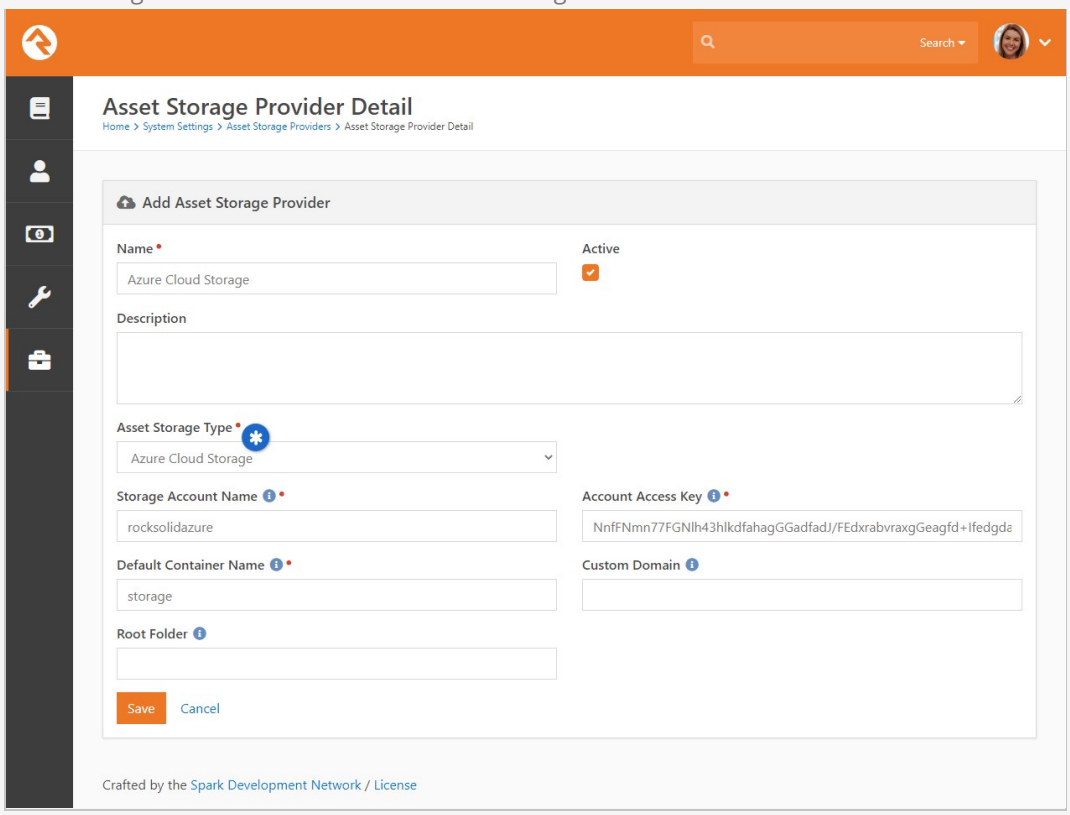
Asset Storage Provider Detail - Amazon S3



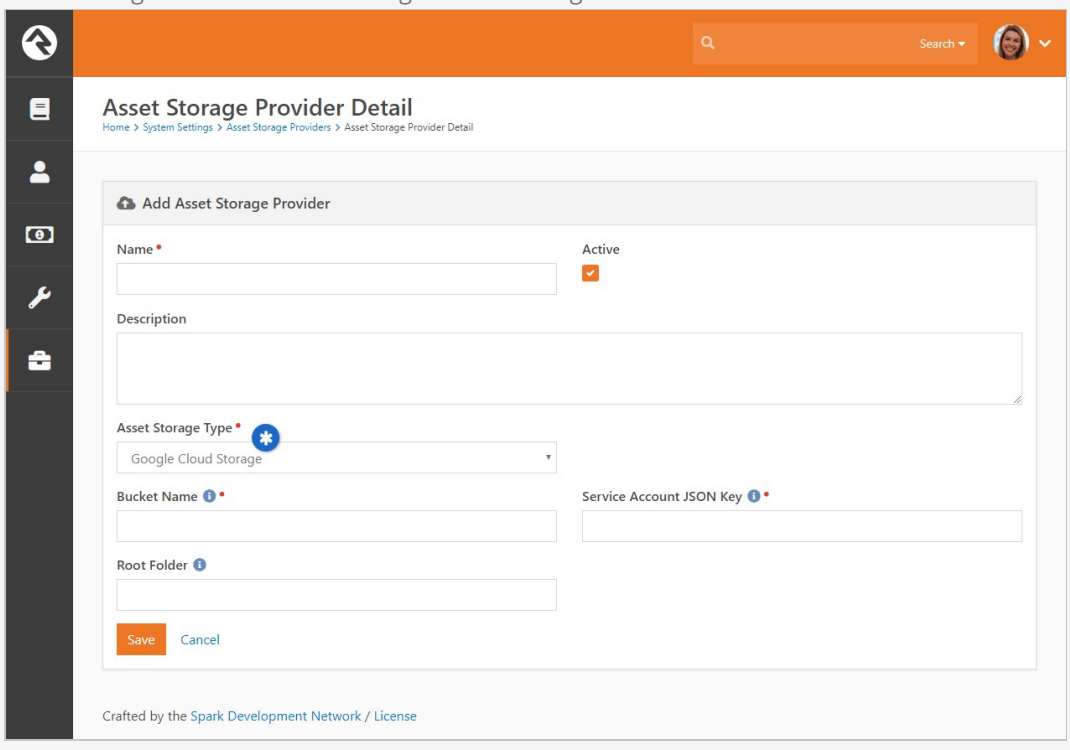
Warning: Signed URLs

If you've chosen to use Amazon S3, you'll be given the option to use signed URLs. Signed URLs are unique on every request, so be careful when using them in RSS feeds or with other content that might be scraped or cached by other 3rd parties. It's possible that these 3rd parties will see that these URLs are constantly changing, and will keep downloading them, which will cause your storage costs to get high. In these cases, use an unsigned URL because they are always the same across all requests.

Asset Storage Provider Detail - Azure Cloud Storage



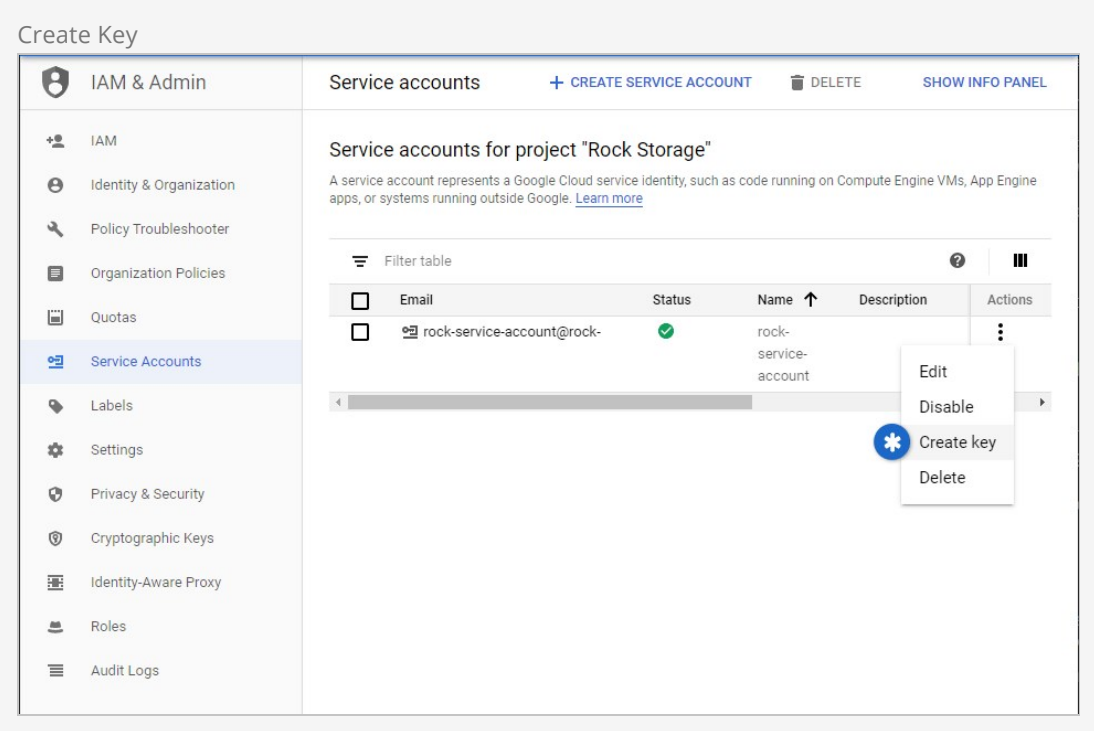
Asset Storage Provider Detail - Google Cloud Storage



Google Cloud JSON Key

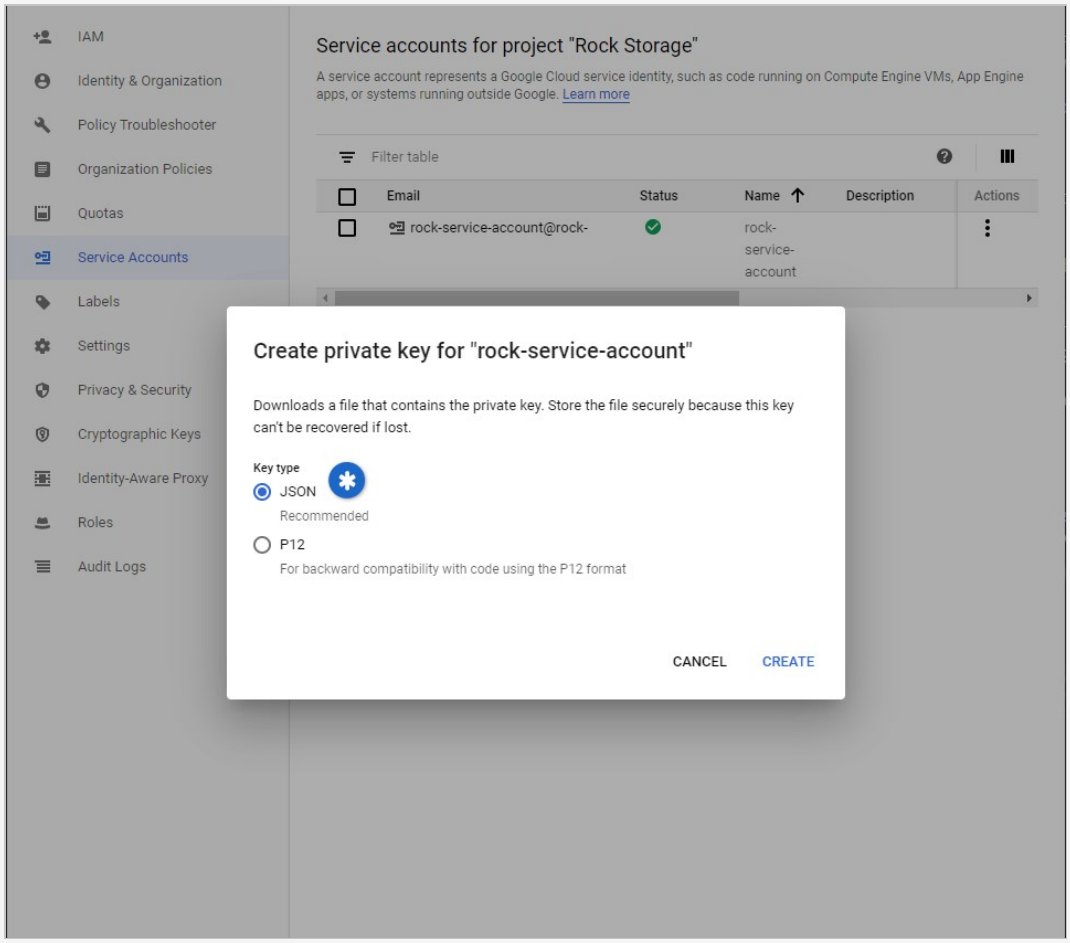
If you're using Google, you'll need to provide a *Service Account JSON Key* in Rock. To get your key, log in to your Google console and access your *Service Accounts*. Under the *Actions* column for

your account click the three dots and choose *Create key*.



You'll need to export your key as a JSON file, so it can be added to Rock. Select JSON as pictured below, and click "Create" to download the file.

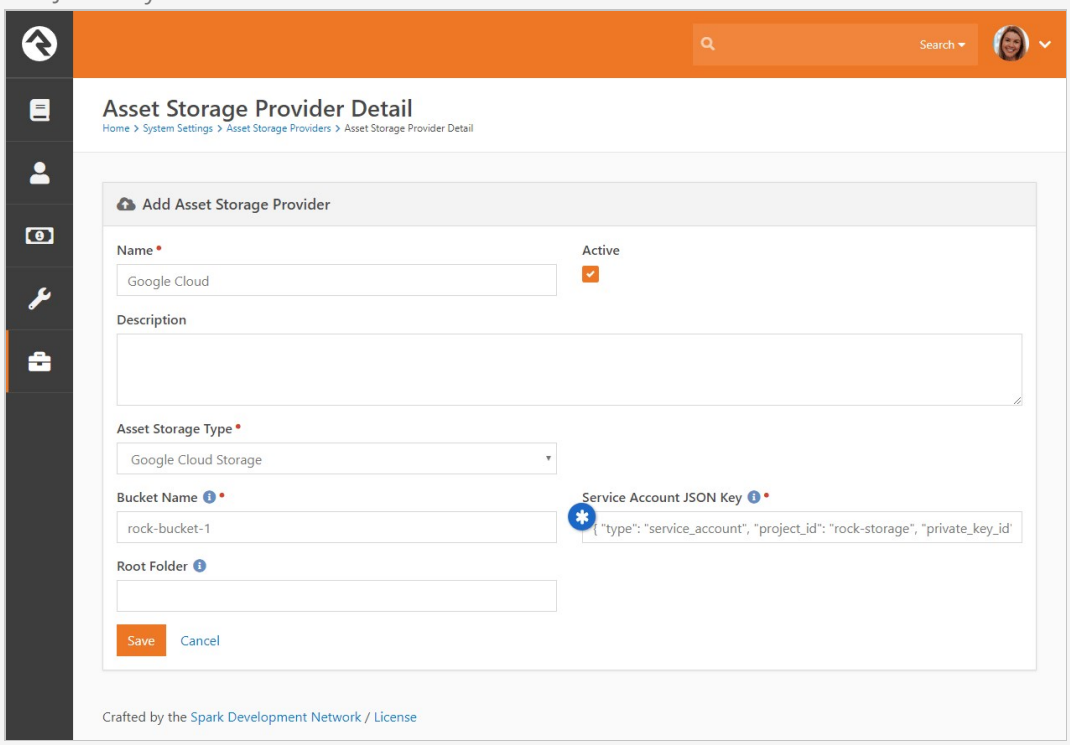
Output Key to JSON



Open the downloaded JSON file and copy all of its contents. The full content of the entire file needs to be copied, not just the elements labeled as keys. A quick `Ctrl + A` and `Ctrl + C` is all you need.

With the contents of the JSON file copied to your clipboard, you can finish your setup in Rock. Paste the file contents into the *Service Account JSON Key* field as pictured below.

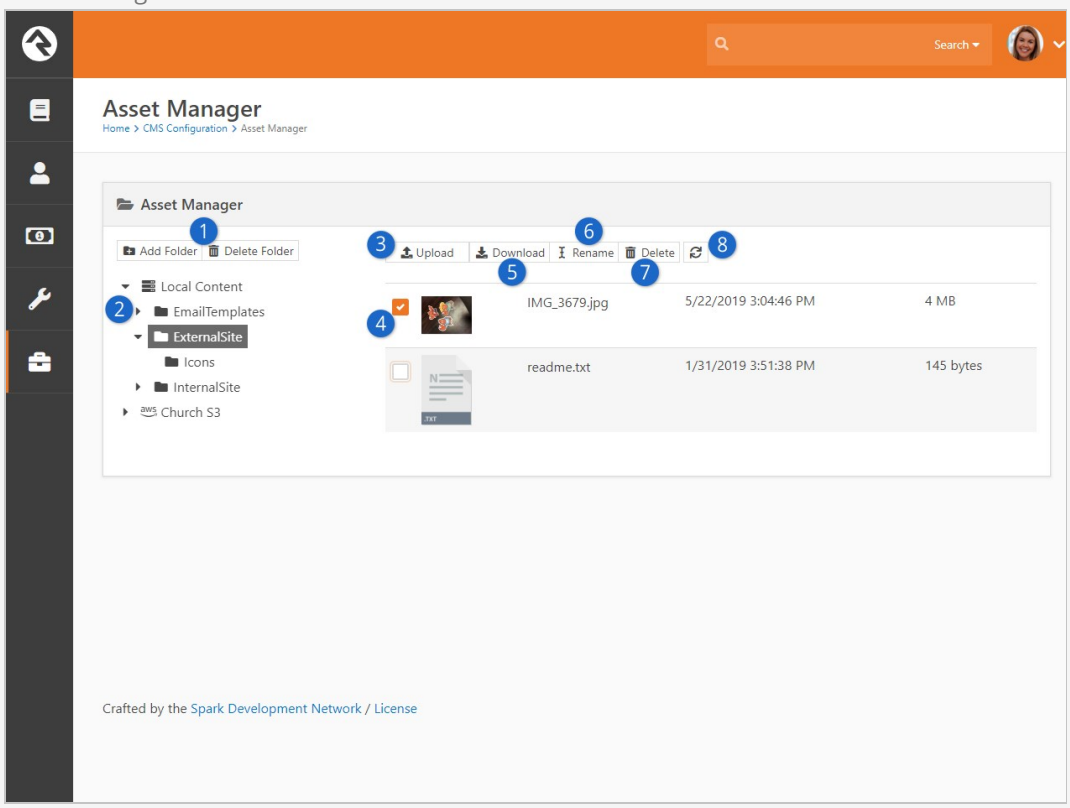
Add JSON Key to Rock



Asset Management

In the CMS Configuration, you can view and manage the files in the asset manager. `Admin tools > CMS Configuration > Asset Manager.` This block allows you to view and manage documents in the providers you have configured. Think of this as your file manager for your cloud storage and Rock server.

Asset Manager



1. **Add and delete folders**
   From here you can add or delete folders in the asset manager.
2. **Folder tree**
   The folder tree shows parents folders with child folders within them.
3. **Upload a file**
   You can upload a file from your local machine to the asset manager here.
4. **Selecting files**
   Selecting one or more files to use.
5. **Download**
   While a file is selected - you can download it to your local machine.
6. **Rename**
   While a file is selected - Rename it.
7. **Delete**
   While a file is selected - Delete it.
8. **Refresh**
   Refresh the folder if files were uploaded from the source and aren't showing on the list yet.

Adding Content

You might be wondering, when should I use the asset manager and when should I use a file attribute? The difference is subtle. File attributes are best used to attach files to content channel items or people where you don't care about the details of where the file is stored (this is all handled for you in the file type setup). Using the asset manager gives you much more control of

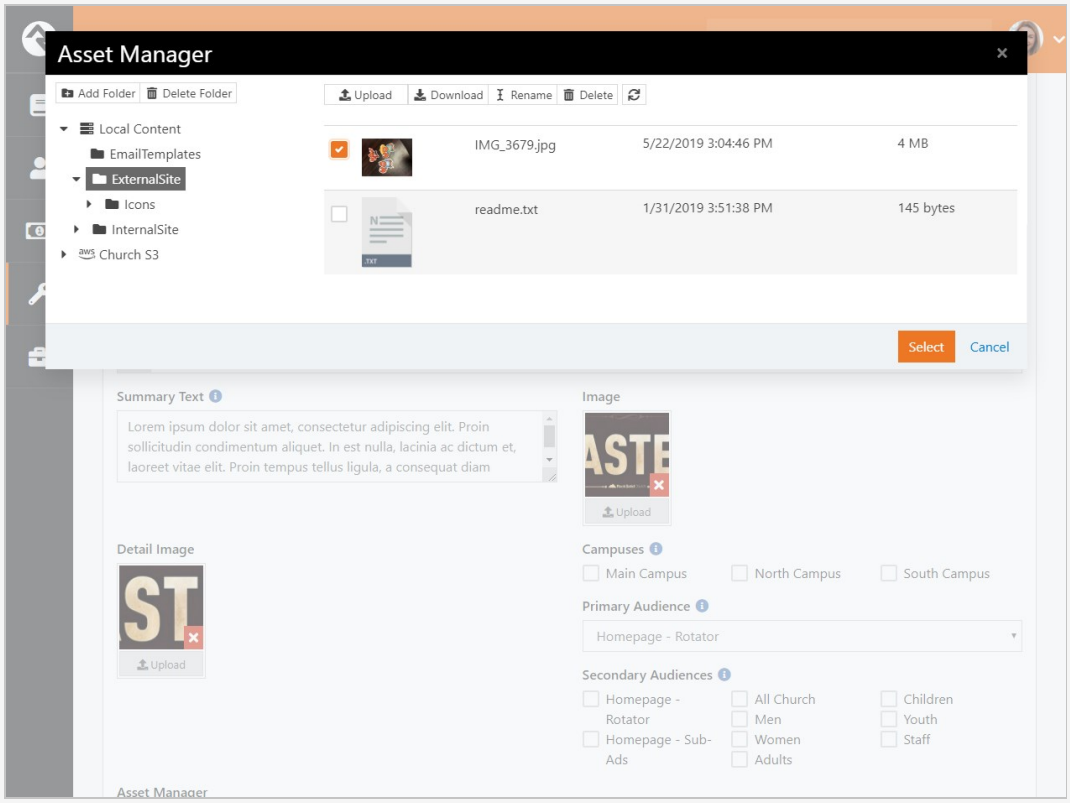
where and how the file will be stored. It allows you to select files that are already stored in your cloud provider. This is handy in cases where someone has already uploaded an asset that you want to use. This is common in many media arts workflows.

With that said, there are two ways you can use assets. One is using an asset attribute, and the other is through the HTML editor. We'll touch briefly on both options below.

Asset Attribute

When you configure an attribute for assets you will see the asset provider below. Selecting this will display a modal where you can select or upload the asset.

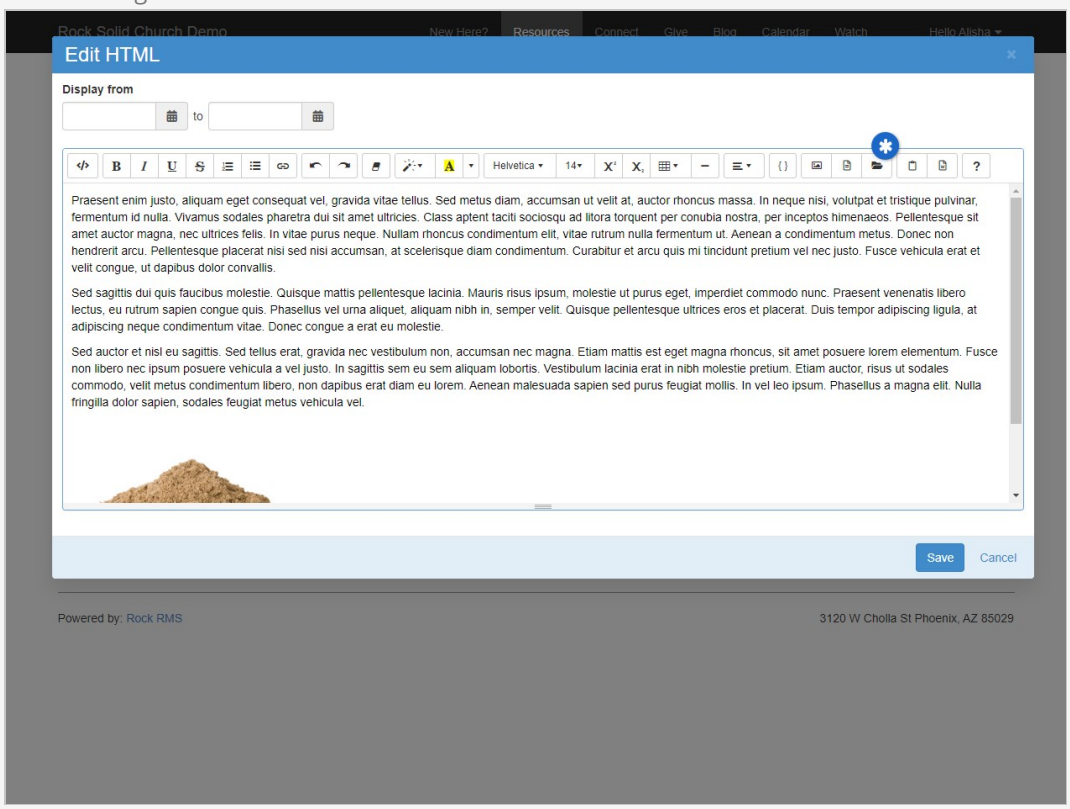
Asset Manager



HTML Editor

Rock's "WYSIWYG" editor tool also allows you to work with assets. On the toolbar you will see a icon which opens the asset manager to search for your files.

Asset Manager



Asset Manger File Folder

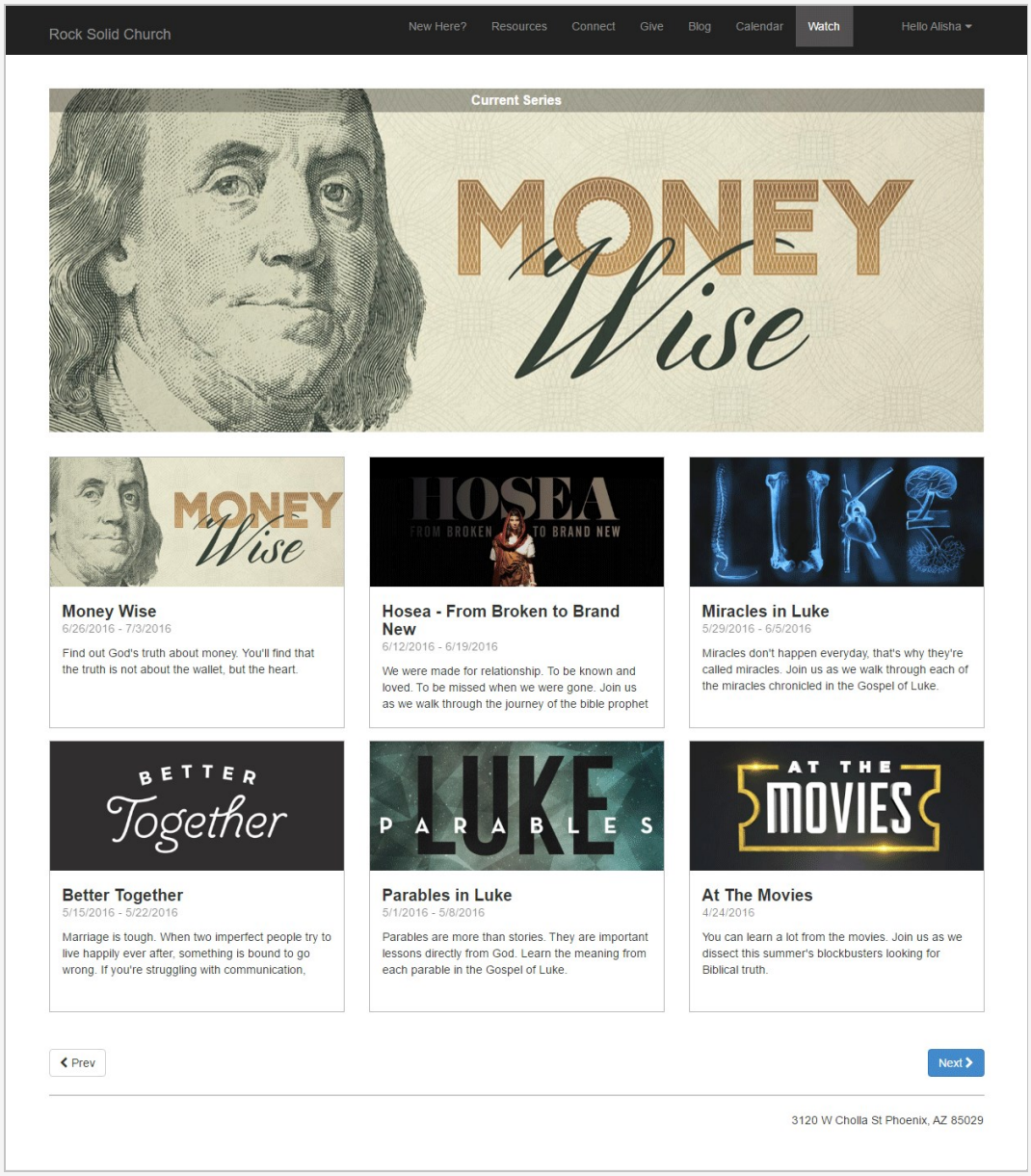
These settings are available on both the internal and external editor tools.

Podcasting

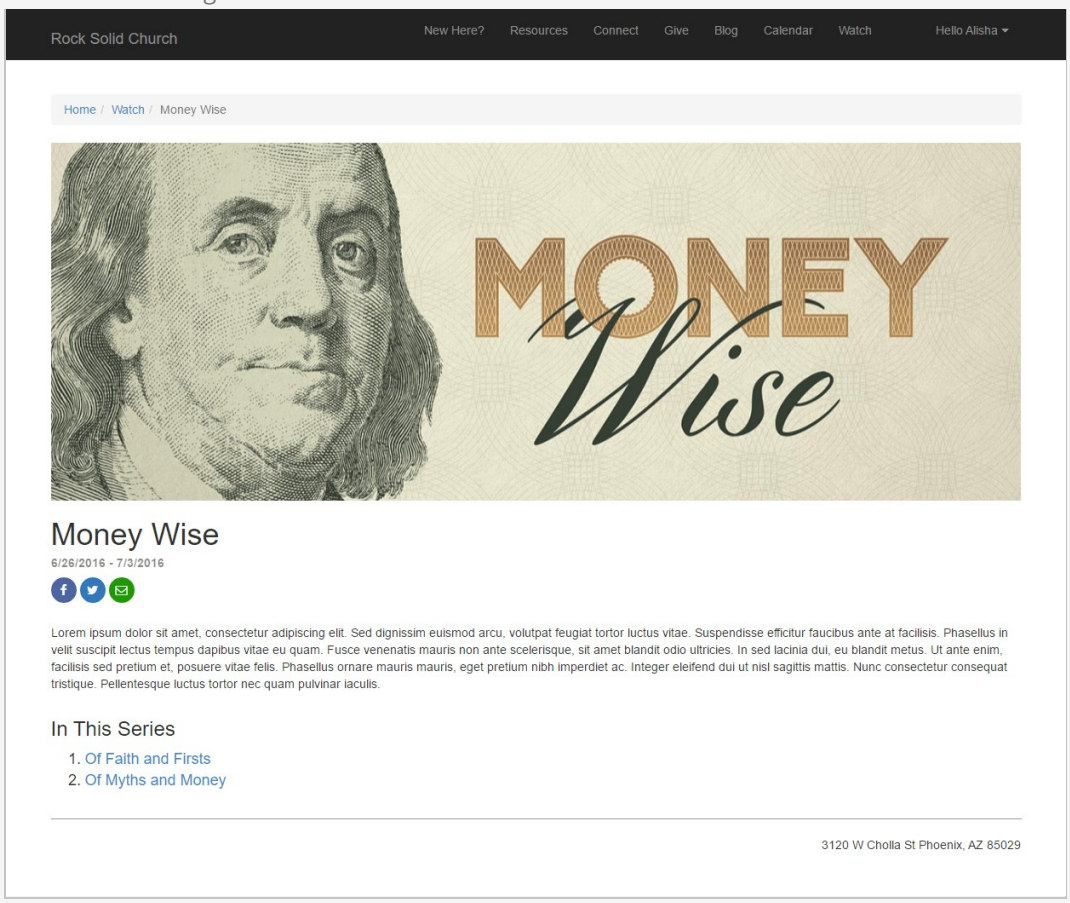
Instead of writing dedicated podcasting tools we instead added powerful features to Rock's content channels to enable podcasting. Rock ships with a basic implementation. Feel free to add to it by adding attributes to either the Podcast Series or Podcast Messages content channels.

To help give you an idea of what's possible we've added a few series and messages. Special thanks to Central Christian Church (Arizona) and NewSpring for donating their series graphics. Below is a quick walk through the various external pages that make up podcasting.

Podcast Watch Page



Podcast Series Page



Podcast Message Page

Keep in mind these pages are using the Stark theme which is devoid of styling. What you see is a blank canvas for you to create from.

> ### Podcasting File Types
> While you'll probably host your podcast files on a video hosting platform / content delivery network you may want to change the file type that the series graphics are hosted with. Out of the box we configured the graphics to use the default 'Unsecured' file type. This however saves the graphics to the database. There are advantages to doing this, but it does take up valuable database space. You may consider moving to a file type that uses the file system or better yet use one of the plugins in the Rock Shop to store the files on Amazon S3 or Azure.

So get out there and spread your message!

Landing Pages

Now that you have the tools in your belt for adding content to pages, let's look at a special type of page that you can use for specific purposes: Landing Pages.

What Are Landing Pages and Why Should I Use Them?

Landing pages are designed to drive people to a single focus, usually for a specific event or resource. For instance, you might set up a landing page with information about your Christmas services, to register for a conference, or to join a small group.

It's different from your external website's homepage because your homepage has a lot of information about your church in general, with links to more specific areas the visitor might be interested in. A Landing Page is designed to be self-contained, with very few links off of the page, and usually gives all of the information someone might need about the topic on a single page.

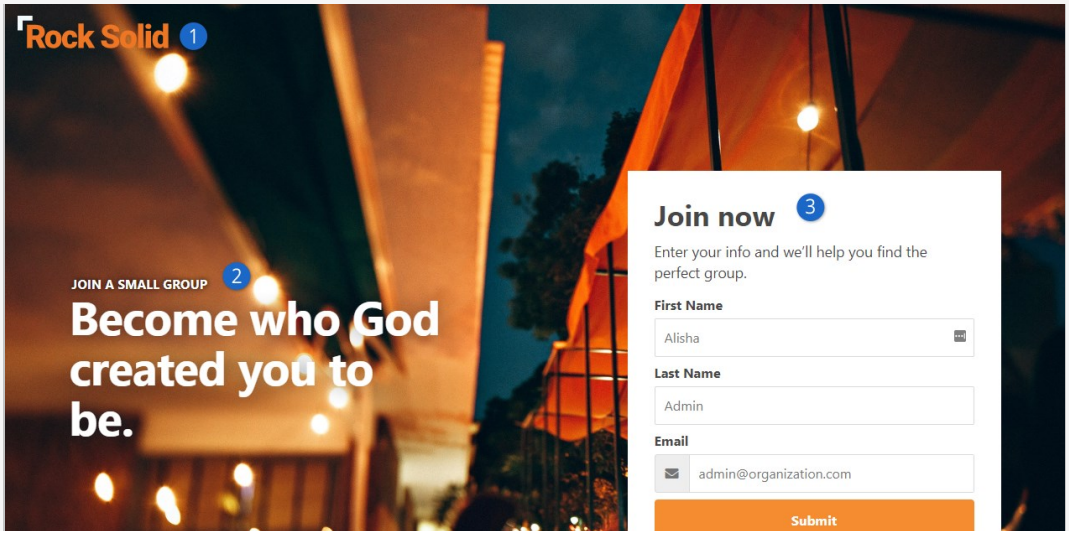
This is important because it helps you make sure that you're providing your visitors with exactly the information they're looking for, without making them search through your entire site for it. It's a better experience for them, and helps your message reach the people who are looking for it - talk about a win-win!

If your goal is to get your visitors to take a specific action, such as joining a group or filling out a form (referred to as a "Call To Action"), you'll be able to add those items to these pages as well so that they can take action as soon as they have the information they need.

A Sample Landing Page

Enough talk! Let's take a look at the sample Landing Page that comes with Rock and you can start to see what you can do with these types of pages.

Sample Landing Page



4 **Make Friends**

Ea doming saperet eleifend pro, facete mnesarchum qui ne, purto concludaturque ei mea. In his suscipit oporteat, meis assum tritani ea vix, quodsi eirmod id sea. Debitis adolescens scribentur eam in.

Have Fun

Tation libris in his, sit eu nemore eleifend liberavisse. Ad ius dolor vulputate consetetur. Pri id phaedrum intellegam, sed id postea scriptorem. Eligendi dissentiunt usu ad, ei sale tractatos sit. Mea modo idque apeirian id, usu an essent efficiendi. Paulo labore mentitum in per, ea pri quas omittam.

Grow Together

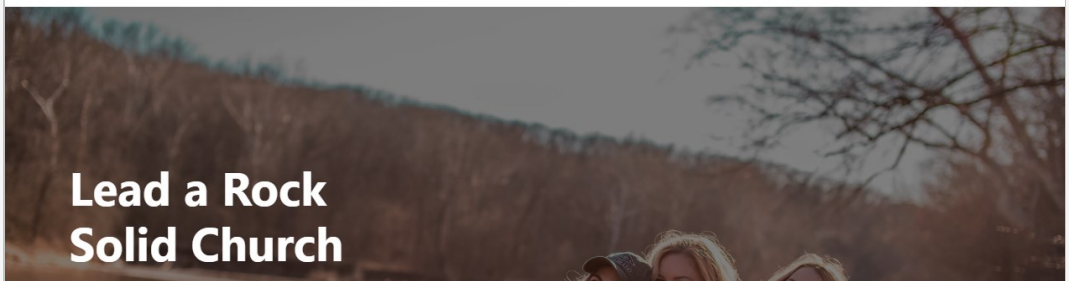
Virtute deseruisse ne mel, labore animal mediocritatem qui in, mei oratio causae eu. Has cu vidit viris, te vim ubique numquam noluisse. Cum quem sapientem voluptatibus no, at agam voluptua vis. Vim tollit accusam honestatis te, tota probatus.

Vision

Lorem ipsum dolor sit amet, cum nibh error sapientem at. Qui duis summo at, tale tibique conclusionemque pro ut. Nec tibique deleniti delectus te, zril quaestio conclusionemque vis no, posse appellantur mei ei. At vix corpora fastidii vulputate. Lorem ipsum dolor sit amet, cum nibh error sapientem at. Qui duis summo at, tale tibique conclusionemque pro ut, nec tibique deleniti delectus

Vision

Lorem ipsum dolor sit amet, cum nibh error sapientem at. Qui duis summo at, tale tibique conclusionemque pro ut. Nec tibique deleniti delectus te, zril quaestio conclusionemque vis no, posse appellantur mei ei. At vix corpora fastidii vulputate. Lorem ipsum dolor sit amet, cum nibh error sapientem at. Qui duis summo at, tale tibique conclusionemque pro ut, nec tibique deleniti delectus



1. **Logo**
   The logo you provide in the site configuration will be shown at the top left of any of your landing pages
2. **Headline and Hero Image**
   Each page will have a Headline zone where you can add an HTML block, for instance, and get your succinct "above the fold" message up front and center. The Hero Image is a page attribute, so you can specify the background for this area on each page.
3. **Workflow**
   The sample page has a Workflow Entry block, showing you how you can provide a Call To Action to fill out a form. Check out the `Blasting Off with Workflows` guide for more information on building these forms.
4. **Page Content**
   There are several zones in the main body of the page where you can add multiple blocks, such as HTML blocks, content channel blocks, etc.
5. **Secondary Hero**
   Near the bottom of many of the Landing Page layouts is a secondary hero section. You can specify which image is used for each page on the page settings, and provide an HTML block or other type of block to display content and secondary calls to action over the image.

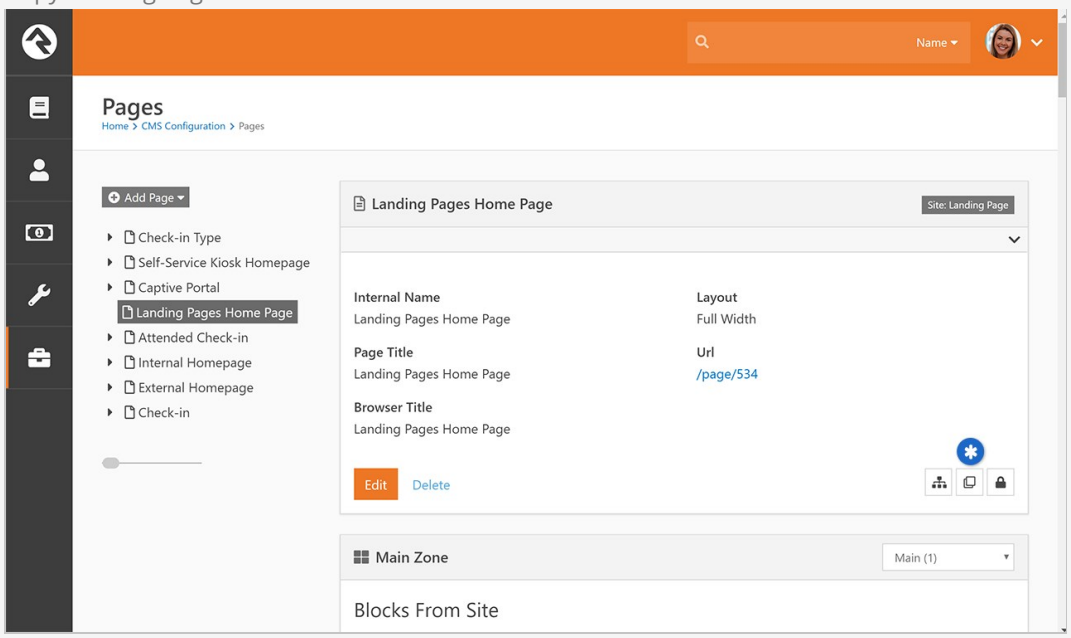
Getting Started with Landing Pages

Hopefully your imagination is already running with all of the ways you will be able to use these simple and beautiful pages! The best part is, all of the complex styling to get the text in the correct positions over the images is already done for you. All of the content on this sample page can be added using the HTML block WYSIWYG editor - no knowledge of HTML needed.

So, let's get started! Your Rock installation already has a Landing Page site with the *LandingPage* theme installed. Your landing pages will usually be a page on this site, rather than being an entire Rock site of their own. You can find this page from your internal site by clicking on `Admin Tools > CMS Configuration > Pages` and choosing "Landing Pages Home Page" in the menu on the left.

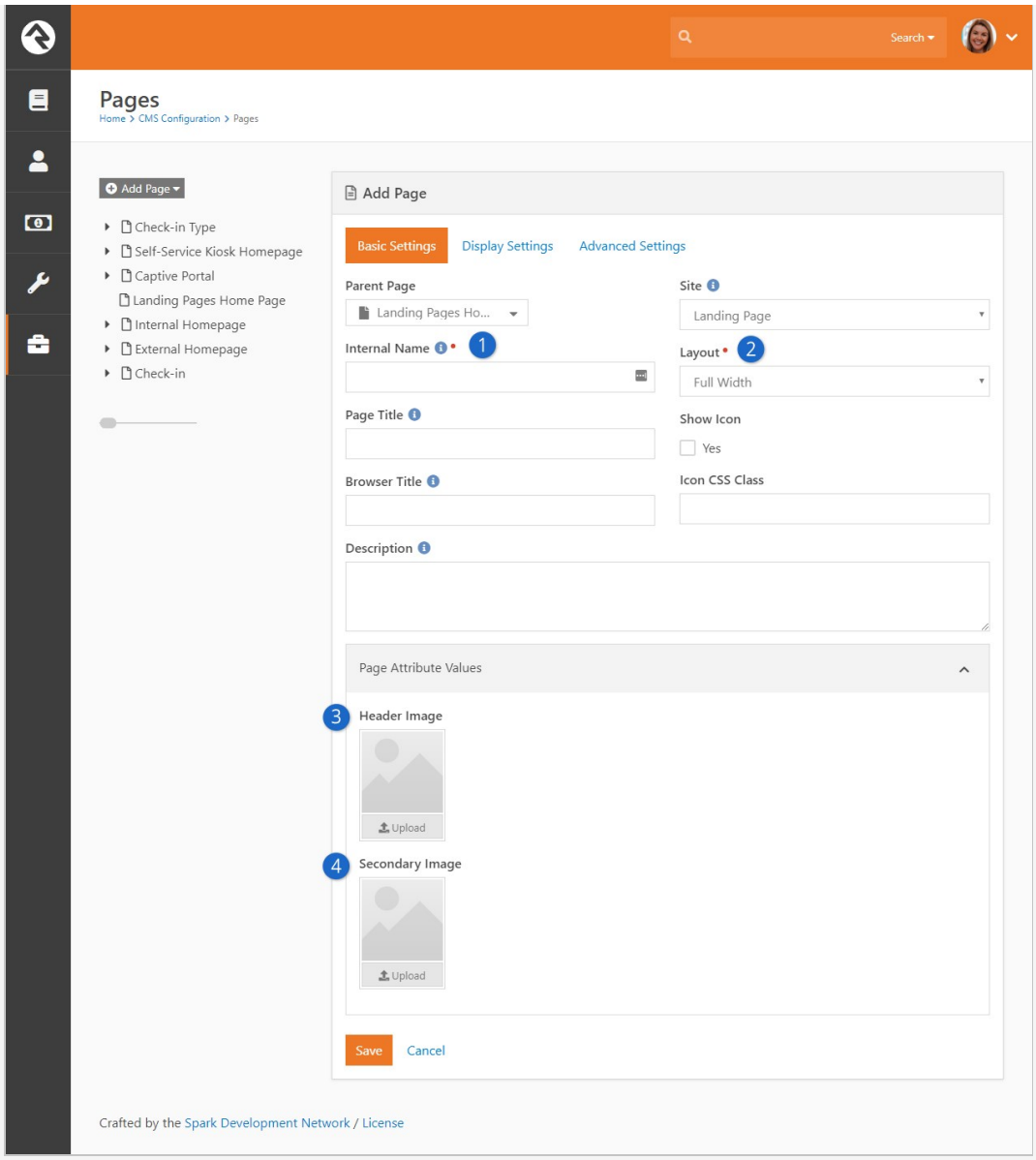
Now click the `copy` button shown below, and de-select "Include Child Pages".

Copy Landing Page



Once the page is created, click `Edit` and you can fill in a little bit of information about the new landing page.

Edit Landing Page



1 **Page Names**
Provide at least an Internal Name for the new page: this is the name you'll see for the page from the admin side of Rock. Frequently this will be the same name as you provide for the Page Title (which can be displayed on the page body itself) and the Browser Title (which is what the browser tab will be called when the page is loaded), but they can be different if you wish.

2 **Layout**
On a site using the LandingPage theme, you have more layout options than most of your other themes. Select the layout you want for this particular landing page here (refer to the below section for more information on your choices)

3 **Header Image**
This is where you can upload an image that this page will use as the background for the hero image at the top of the page. All of the fancy formatting is done for you- you just need to provide the image itself

4 **Secondary Image**
Some layouts have a secondary hero image near the bottom of the page (such as we saw in the sample Landing Page above). If the layout you selected above has this zone, you can upload an image here for it to use as the background.

Once you've updated all of the information for the new page, click Save. When the page reloads, you'll see a link to your new Landing Page, which will usually look similar to /page/123 . Click that link and you'll be taken to your new landing page, with the logo and graphics already in place, and content copied from the initial demo page, ready for you to edit as you wish.

Wasn't that easy? Now you can use the "Zones" button on the Admin Toolbar and start adding blocks and content to your page

More Information on Landing Page Layout Options

As we mentioned above, Landing Pages have a few more layouts than other site templates. Here are some thumbnails of the layouts available to you along with the available zones, so you can decide which layout to use for your new page.

Notice that some pages are designed not to scroll (those called "Simple") and will adjust to the height of the browser they're loaded on whenever possible. Most of the "Full" layouts have hero image sections based on the height of the browser (which is labeled "Viewport Height" on these thumbnails). You don't have to have content in all of the zones shown; they're simply available to you to make sure you can easily add any blocks to the page where you want them to lay out. Any of the layouts with two image placeholders will use both the Header Image and the Secondary Image you specify in the Page Attributes.

Landing Page Layouts

Strategies for Managing Your Site

As you're working through your content strategy for your site it's important to think about how you will maintain each page. There are several tools you can use to reduce the burden of keeping your site up-to-date.

Let Dynamic Content Do the Work

The dynamic content tools discussed above can save you a lot of time by giving you an easy workflow for adding content to pages. Think of these tools as structured bits of content that can be scheduled to display on your site. On each page think about how dynamic content could be used to keep the content fresh.

Remove the Bottleneck through Delegation

It sounds scary but allowing your ministry leaders to edit their content on the website can be safe. The secret is in the configuration. Below are some tips to make this a success.

- Give the ministry leaders access to small pieces of content, not the whole page.
- Use the HTML editor's pre/post text to ensure that the wrapping markup cannot be changed. Say for instance you give the ministry access to edit a Bootstrap alert box on the page. Be sure that the markup for the alert is in the pre/post text so the user can not remove or edit it.
- Enable the HTML editor's approval system. This will allow you to review the changes before they are published to the site.
- Use security wisely. Don't give a single user access to edit a specific content block. Instead, consider creating reusable security roles (e.g. *Website Editors – Childrens*). This will allow you to add similar user permissions in the future.

Routes

As we've discussed, webpages in Rock don't exist as files on the server's file system. Instead, they are dynamically created as they are requested from the database to be individually tailored to the permissions of the current user. In the past this meant some really ugly URLs with numerous query parameters. For instance, some similar systems may have used an address like this:

`http://www.mysite.com/index.php?page=152&groupId =12`

Not only are these addresses unattractive, they are also not very friendly for search engines visiting your site (aka SEO friendly). Rock uses the concept of *Routes* to help beautify its addresses. The default route for a page will look something like:

`http://www.rocksolidchurchdemo.com/page/123`

But, you can do better. Let's say page 123 in the example above was actually a promotional page for an upcoming car show. You could add a new route on the page property dialog (⚙ on the page's admin bar then look under *Advance Settings*) with the value of *carshow*. This would enable the link http://www.rocksolidchurchdemo.com/carshow to also work for this page.

> **Multiple Routes**
> In fact, you could create several routes for the same page. This is especially helpful in tracking the success of each of your marketing pieces. If the mailers, mass email and invite cards each have a different address, you can measure which is more successful at getting people to your site.

> **Avoid Multiple Page Routes for Indexed Pages**
> Having multiple routes present for a page that you wish to be indexed by search engines can be significantly damaging to that page's ranking. This is because the search engine is unable to detect that each individual route is pointing to the same page, and instead interprets them as duplicate pages, with identical content. The result is that a page with multiple routes will essentially be competing with itself, diluting its page ranking in the process.

Advanced Routes

So far we've looked at how to create simple routes. Pages that contain dynamic content might have one or more required query parameters to be able to display. Consider a page that displays calendar events. Its default route might be *http://www.rocksolidchurchdemo.com/page/234?EventId=12*. Creating a route with the value of *Event/{EventId}* would add the ability to load the page with the address of *http://www.rocksolidchurchdemo.com/Event/12*. This new address is not

only visually more appealing but is also SEO friendly.

You can add as many query parameters to your route as you like. For instance, the route of *Event/{EventId}/{TabId}* would enable the address of *http://www.rocksolidchurchdemo.com/page/234?EventId=12&TabId=3* to be represented as *http://www.rocksolidchurchdemo.com/Event/12/3*.

If you would like to manage all routes defined in Rock you can see them listed under `Admin Tools > CMS Configuration > Routes`. From here you can edit or delete any route in the system.

> **Global Routes**
> From the *Routes* page you can designate certain routes to be *Global*. Global routes ignore a site's *Enable Exclusive Routes* setting.

Routing Order

Rock uses the following order to choose what page is displayed for a provided URL. In cases where there is no matching route on a given site the oldest matching route from any site is used.

1. Page ID *(/page/12)*
2. Matching page route and matching site
3. Matching Shortlink and matching site
4. Oldest matching page route from other site
5. Oldest matching shortlink from other site
6. Page not found (404)

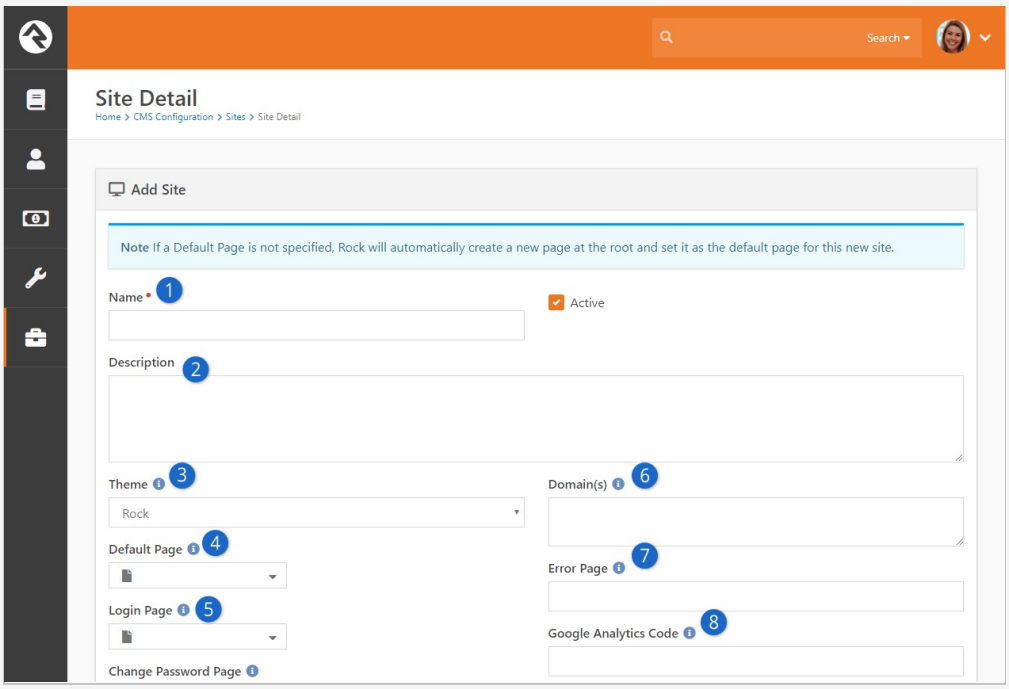
> **Site Scoped Routes**
> As of Rock v6.0 routes are now scoped to the site. That means you can use the same route more than once as long each instance is on a different site.

Creating A New Site

Creating a new site in Rock is simple. But, it helps to do things in the proper order. Following the steps below will lead to a well-configured site every time.

1. First, navigate to the site list page `Admin Tools > CMS Configuration > Sites`
2. Click the (add) button at the bottom of the grid of sites.
3. Fill in the site configuration outlined below:

Add Site



1 **Name**
Provide a name for your site. This name will not appear on the site itself, just the admin screens used to support it.

2 **Description**
Provide a description for your site.

3 **Theme**
Select a theme for your site. If your theme is not yet ready, we recommend that you pick the *Stark* theme basic template.

4 **Default Page**
Important: We highly recommend leaving the default page blank. If you do not provide a default page, Rock will create it for you at the root page level with all the right settings. Creating this page before the site can cause misconfiguration.

5 **Login Page**
Each site defines its own login page. This page will be used when an unknown user clicks to a page that requires additional security. You do not have to select one at the time of creation. You may wish to configure this later.

6 **Domain(s)**
In order for Rock to serve up your site, it needs to know what domains (e.g., www.rocksolidchurchdemo.com) it represents. You can provide multiple domains in this field delimited with a comma.

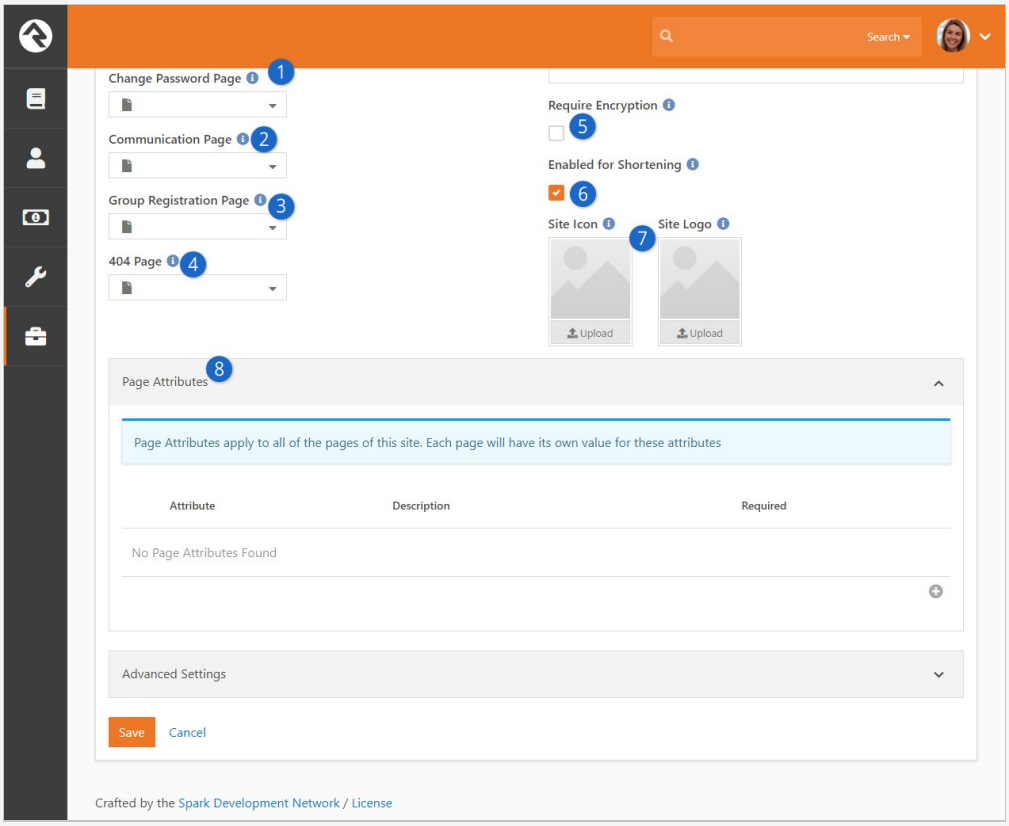
7 **Error Page**
Let's face it, errors happen. Instead of displaying the default Rock error page you can design and show a custom page for your site.

8 **Google Analytics Code**
You might want to integrate your site with Google Analytics. Rock makes this simple by allowing you to provide your site's Google Analytics code. We'll do the rest.

Active - Inactive

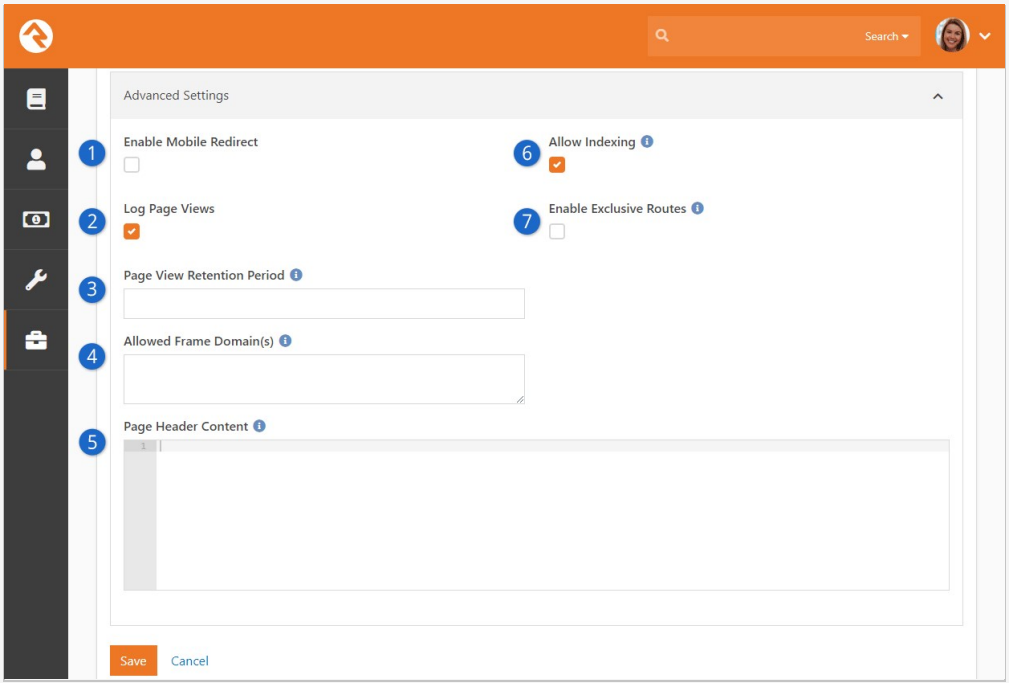
You can mark web sites inactive. This is handy if you have older websites that you still want to keep around, but are not actively being used. Marking them inactive removes them from the site list. There is a filter to allow them to be displayed if needed. An inactive website will still function, it just won't be displayed on the list of sites.

Add Site 2



1. **Change Password Page**
   This setting will determine the page to link to for changing the password.
2. **Communication Page**
   The Grid uses this setting to determine what page to redirect the user to when clicking the New Communication button at the bottom of a grid of people.
3. **Group Registration Page**
   The group registration page setting is not yet implemented in Rock.
4. **404 Page**
   You have the option to provide a custom *page not found* (aka 404) page for your site. This too can be set at a later date.
5. **Require Encryption**
   This setting will require that all pages on this site load with SSL encryption. If a page is attempted to be loaded with http, Rock will redirect it to https.
6. **Enable Shortening**
   Should this site be available when creating shortlinks?
7. **Site icon**
   If you want your site to have a site icon (aka, 'favicon'), upload it here. The recommended image size is 192x192. Rock will automatically create all of the sizes required by different browsers and devices based on the image you supply. Once uploaded, you can turn the icon on and off for individual pages by checking the Site Icon box in each page's properties, accessed in the Admin Toolbar. Similarly, there's an option to upload a site logo, which some themes use to apply some change to a site. See the theme's documentation for sizing information.
8. **Page Attributes**
   This is where you can add attributes to the pages of your site. Page Attributes apply to all of the pages of the site, but each page has its own value for each attribute. To learn more, see the Page Attributes section below.

Add Site 3



1. **Enable Mobile Redirect**
   This checkbox enables mobile redirects. This allows you to route your mobile users to a different page or site if they visit any page on this site.

2. **Log Page Views**
   This setting determines if each page view of this site should be tracked. This allows you to gain valuable metrics about a page AND more importantly about your guests' activties and interests.

3. **Page View Retention Period**
   If page tracking is enabled, you can set how long the page views are stored. You'll find that for popular sites this data will grow quickly. You may want to limit how much of it you keep.

4. **Allowed Frame Domain(s)**
   If you need to allow an external site/domain to be able to embed your site (such as in an iframe) just enter each domain as a space delimited list. Rock will then take care of sending the correct page headers that block *all sites* not in the list. The value you enter here will be used for the `<source>` as described in Content-Security-Policy frame-ancestors directive.

   > NOTE: Your Rock URL must also appear in this list otherwise you will lock yourself out of Rock's modal popups (such as the HTML editor, block settings, etc.) Therefore, if you wanted to allow www.yoursite.com to be embedded on www.xyz.com, you would specify the following in your list:
   > `http://www.yoursite.com https://www.yoursite.com http://www.xyz.com https://www.xyz.com`

5. **Page Header Content**
   The content provided in this field will be added to each page's head section. This is one area where you can do a lot of interesting customization of your site by using page attributes. For more information, see the Page Attributes section below.

6. **Allow Indexing**
   This setting will enable or disable the pages of the site from being indexed by web indexes such as Google an Bing. If you disable indexing, Rock will add <meta name="robots" content="noindex, nofollow"> tag in the page header to keep web indexes from crawling your site.

7. **Enable Exclusive Routes**
   If enabled, other sites will not be able to use this site's routes, and routes from other sites will not work on this site. If the route is configured as "Is Global" then this setting is ignored.

4. Once you've provided the above information and clicked `Save`, your site is ready for the next step, which is to start creating pages. The best way to get to your new default page is to use the *Page Map* under `Admin Tools > CMS Configuration > Page Map`. From here you can click on your default page.

> **Site Attributes**
>
> Attributes can be added to any entity in Rock, including Sites. If you've added any site Attributes, you'll be able to see and provide values for them from the Site Detail block. See the Entity Attributes chapter of the `Admin Hero Guide` for more details.

Page Attributes

The Page Attributes section of the Add Site screen is an advanced setting that gives you a ton of control over your layout of your site. The attributes you create here will apply across all of the pages of your site, but each page will have its own attribute value. For example, you create an image attribute for a page, then dynamically access that attribute in your header, as shown in the following sample code:

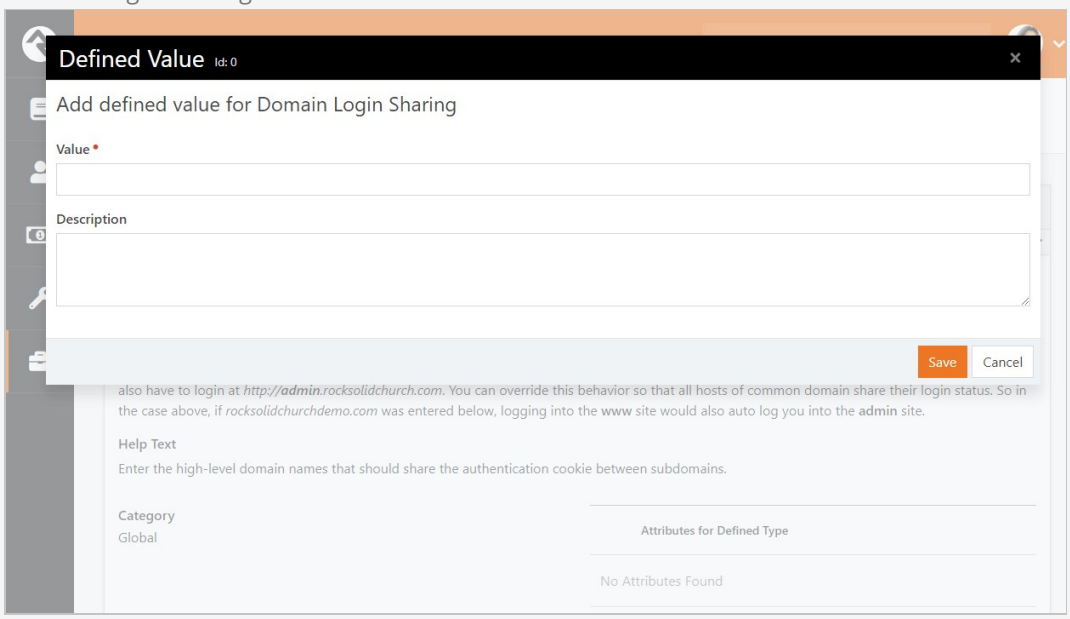
Set Banner Image

Cookies

Rock is designed to use cookies (the electronic kind, not chocolate chip) to store and transmit information. Cookies are packets of data carrying identification information, such as logins and passwords, which are sent from ISPs to browsers and back to track server access. This is why sometimes when you browse to a website, it already knows who you are. That site has stored a cookie containing your identification information. Typically, cookies are created when you click a "remember me on this computer" option when logging into a site. Some cookies are site-specific, meaning they only apply to a certain website address. Other cookies are global, meaning they apply to all sites at a specified domain.

By default, Rock doesn't share login info across domains, but you can override this setting to allow your sites to use global cookies. This can come in handy when you have both an internal and external site, and you want your members to be able to move easily between them without having to login twice. It also may be useful to admins when they need to impersonate another person. (For more information about impersonation, see the Impersonating Another Person section of the `Rock Admin Hero Guide`.) Global cookies are configured in the Domain Login Sharing screen, located at `Admin Tools > General Settings > Defined Types`.

Domain Login Sharing



Enter the common domain in the Value field to allow login access for all sites with that domain name. For example, entering a value of "rocksolidchurch.com" would allow a person to login at http://www.rocksolidchurch.com and be logged into http://admin.rocksolidchurch.com simultaneously.

One thing to be aware of when using global cookies is it can lead to instances where both a global and a site-specific cookie are in use. When this happens, a person may be required to logout twice in order to clear out both cookies.

> ### Authentication Cookie Persistence Length
> The authentication cookie length is set in `Admin Tools > System Settings > System Configuration` and is in minutes. By default, the timeout will occur after 43,200 minutes, or 30 days. See the `Admin Hero Guide` for more information.

SEO

Many people ask about Rock's SEO features. While we've worked hard to ensure many of the SEO best-practices the requirements in this area change on a daily basis (just being honest). If there's something you think is missing, or you'd like more information on let us know.

Below are the topics people ask us most about:

- **Google Analytics** The analytics token is set on the site. Rock then applies it to each page on that site for you.
- **Friendly URLs** These are the routes that I mentioned. They are configured on that Page Properties modal (the gear in the admin toolbar at the bottom of each page) on the 'Advanced Settings' tab. You can read more about this topic in the Routes chapter above.
- **Page Description** This is also set on the Page Properties screen.
- **Keywords** This and all other meta tags can be set using the Header Content field on the page properties. Basically whatever you add to this field will be placed into the HTML HEAD tag. We didn't add a special field for keywords as search engines stopped supporting them a while back.

Getting Social

Read any blog on web design and you'll find plenty of posts on the importance of search engine optimization. While it's certainly true that your site must be search engine friendly, it also needs to be social media friendly. Below are some tips on how to ensure your Rock pages play nicely with the most popular networks.

One Thing You Must Do

If you can only do one thing, we highly recommend adding a description to each page you believe will be shared on social media. This is quick and easy to do by accessing the Page Settings from the Admin Toolbar at the bottom of each page.

Without a page description, the social shares will try to figure out a description for your page by stripping the first chunk of text from your page that looks to be the main content. But why make the social networks guess when you can give them the exact description you'd like?

Getting Deeper

Setting the Page Description is nice, but that's just the start. Each social network allows you to describe how your page should be shared using meta tags in the page's header. Unfortunately, there is little consistancy in how this is done. Below we show you how to optimize each page's social network share information using Lava. Simply put these tags in any HTML block on the page and your site will be *socially beautiful*.

Adding Make Up For Facebook

Let's start with Facebook. The three main attributes you want to set for an attractive Facebook share are the title, description, and an image. Below we show you the Lava for each. Again, these Lava statements can be on any HTML block on your page.

- **Title** `{{ 'Title for Page Here' | AddMetaTagToHead:'property','og:title' }}`
- **Description**
  `{{ 'Description for Page Here' | AddMetaTagToHead:'property','og:description' }}`
- **Image** `{{ 'URL to image here' | AddMetaTagToHead:'property','og:image' }}`
  Note: *You'll need to upload the image to the website and link to it for the URL. Your image should be sized to: 1200px x 630px.*

After setting these values, your share should look something like the example below.

Don't simply trust that it'll look right though. Use the Facebook Share Validator to see your formatted share along with tons of debugging information.

Terrific Tweets

Just like Facebook, Twitter has several custom page attributes for you to use to make great looking shares. In fact, Twitter allows you to control even more settings. Let's take a look at the basic settings and we'll move on from there.

- **Title** `{{ 'Title for Page Here' | AddMetaTagToHead:'property','twitter:title' }}`
- **Description**
  `{{ 'Description for Page Here' | AddMetaTagToHead:'property','twitter:description' }}`
- **Image** `{{ 'URL to image here' | AddMetaTagToHead:'property','twitter:image' }}`
  Note: *You'll need to upload the image to the website and link to it for the URL. Your image should be sized to: 440px x 220px (well that's one recommended size at least, read on...)*

Very similar to Facebook, no? But wait... there's more... Twitter allows you to define 2 different formats of shares which they call summary cards. One card has a large image and the other a smaller.

Large Image

Small Image

`{{ 'summary' | AddMetaTagToHead:'property','twitter:card`

`{{ 'summary_large_image' | AddMetaTagToHead:'property','twitter:card' }}`

Twitter also has a helpful validator to help visualize what your share will look like. You can also read more about what's possible by reading their documentation.

Calendar Events

Of all the content on your site calendar, events are probably one of the most shared types of content. To assist you in making this easy we've added the social attributes Lava above in the Lava templates for calendar events. We've also added two new event attributes on the public calendar to help you upload specifically formatted images for both Facebook and Twitter. If you've created a custom theme before Rock v6, you'll want to copy and paste this Lava code into yours.

Using Context

Pages are very dynamic. Take for example a page that is a part of a group toolbox which is used to display a roster for the group. When Ted logs in and navigates to the roster page it will show the contents of his group, but when Bill comes to the same page his roster is displayed. This all works because, while the page is the same, the "context" of the page is specific to their group. This context can be set through either a parameter in the page address query string (e.g. page/234?GroupId=12) or by the internal code of a block (the query string method is most common).

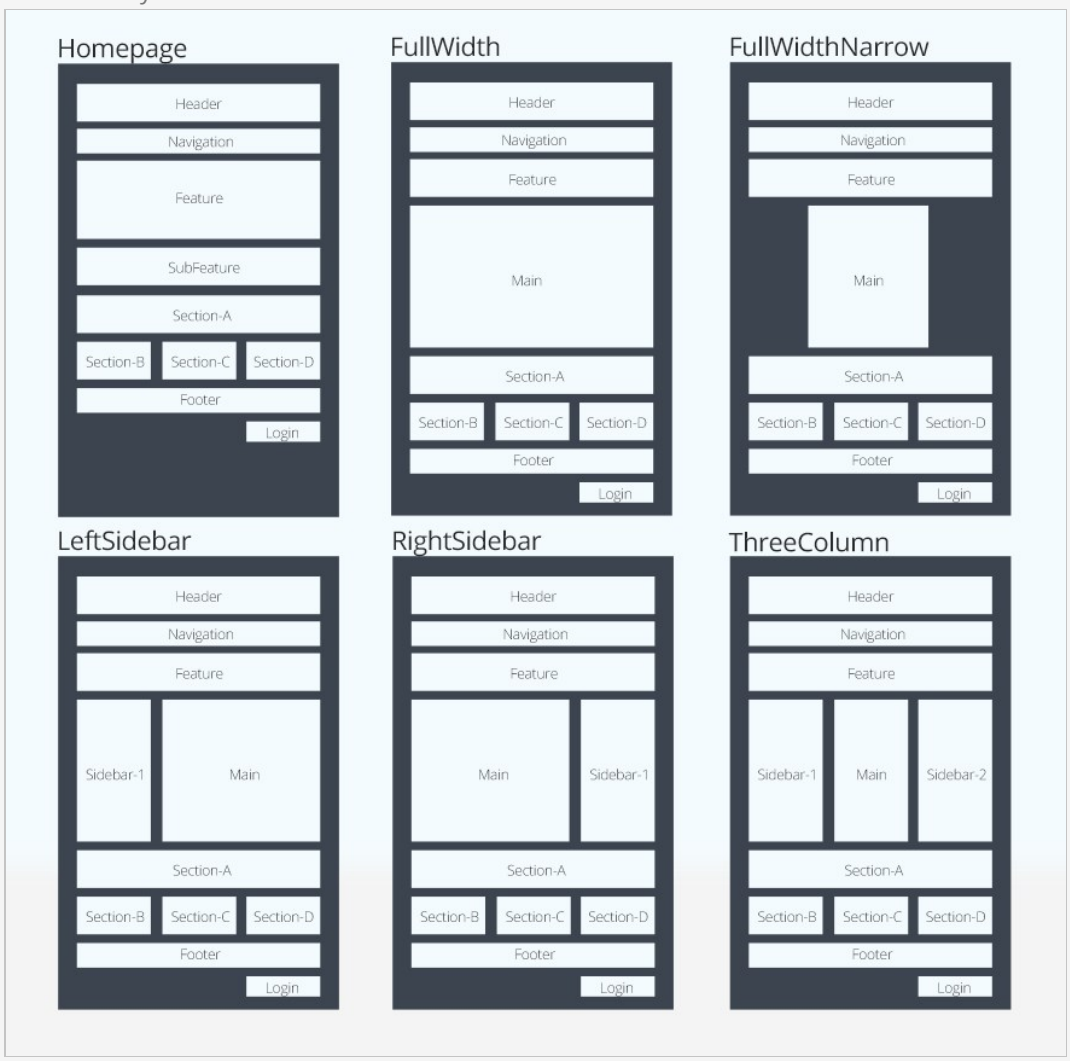
You're probably thinking, "Yeah that all makes sense. The page loads with a query string of GroupId=12 so the roster block shows the member list of that group. Simple." And you would be right, but you can also have more fun with the page. Say you wanted to have a custom message on the page for that specific group. How could you make that happen? Luckily some blocks, including our friend the HTML editor, are context aware. This awareness allows them to look at the context of the page and adjust their content accordingly. To implement our group specific message we would simply set the HTML editor's context block setting to *GroupId*. The editor will then provide you with a custom value for each group.

As you look at the pages on your site, pay close attention to each page's query string and route parameters. Realize that you can add context-specific content based on the value of the context. Another good example of when you might use this is if your church has multiple campuses. Rock's context aware features mean that campuses can share many of the same pages while still providing campus-specific content. Using the *Campus Context* block allows you to set the campus context in these scenarios.

Looking Deeper at Layouts

As we discussed earlier, layouts are what give pages their structure. They define zones that tell where blocks can live on a page. While layouts are assigned to a page they are defined by the theme. We've standardized the name of layouts so when you change the theme of a site, the page knows what layout to use in the new theme. These standard layouts are shown below.

Standard Layouts



By following this pattern, you can update the entire look of your site simply by changing the theme for your site.

We know what you're thinking though (because we thought the same way too). You're thinking

that there's no way you could possibly limit yourself to these predefined layouts. We think, though, once you understand the level of attention that went into them, you will find that they meet a vast majority of your needs. Breaking free of these standard layouts is certainly possible. You can create your own new layout types with their own zone names. You will be giving up the ability to quickly and easily change the look of your site. We'd strongly recommend coloring within the lines until you fully understand the architecture and understand what you're giving up by breaking free.

Standing On the Shoulders of Giants

Rock leverages several web design frameworks to help provide industry best practices. Knowing about these frameworks will help you get a jump start on customizing Rock's user experience for your visitors.

Bootstrap

Bootstrap is a front-end framework that brings consistent styling to Rock. We are currently using Bootstrap version 3.4.1. Whether you're tweaking content on a page or writing a custom template, you'll want to get familiar with the standard HTML/CSS mark-up that Bootstrap provides. Reading through their excellent documentation in its entirety is a great way to get started.

> ### Interested in a Template?
> If you're interested in creating a new Rock theme based on an existing template make sure it uses Bootstrap 3.4. This will save you a lot of time.

Font Awesome

Rock uses icons in several areas of the application. These fonts all come from the Font Awesome library. Since these icons are all font-based vectors, they can be colorized and resized very easily. To see a listing of all the icons in the collection visit http://fontawesome.com.

jQuery

jQuery is a Javascript framework that's used by a majority of Internet sites. If you're only interested in making minor changes it's likely you'll never need to work with jQuery, but if you plan to make custom themes or blocks, you'll want to get familiar with it. Rock currently uses version 3.5.1. You're welcome to use a newer version in your theme, but be sure that your version is backwards compatible to 3.5.1 to ensure Rock's core jQuery plugins work correctly. You can find out more about jQuery at jquery.com.

Less

If you're familiar with Cascading Style Sheets (CSS), you've probably experienced the frustration of repeating selectors and duplicate color definitions. Less blends a programming language and CSS. It offers concepts like reusable variables and object-oriented mix-ins. If you're worried about learning another new technology, don't be. Less is super simple. Soon you'll be able to brag to your friends about your knowledge of Less! You can read up on what's available in Less at http://lesscss.org/.

> **A Hint About Less Files**
>
> You'll notice that some Less files are prepended with an underscore (e.g. _print.less). That underscore helps to identify Less files that are not directly compiled into related .css files but are instead used as imports to other Less files. For instance the _print.less file is never compiled into a _print.css file. Instead its contents are imported (appended) to the theme.less file which is compiled into theme.css.

Liquid

Liquid is a templating engine written by Shopify. We've extended and customized Liquid in Rock to form our own templating engine called Lava (get it... liquid rock...). You've already been briefly exposed to the power of Lava in the introduction of this manual. Lava is used in several places in Rock, so it's worth your time to learn it well. Below are just a few of the places it's used:

- **HTML Editor:** Used for dynamically mixing in personal merge fields with your content.
- **Menus:** Navigation menus and page lists use Lava to assemble the HTML that is used to display them on the page.
- **Email Content:** Emails and SMS communications use Lava to personalize their content.

Learning Lava will make you feel like a superhero. Definitely take the time to master it. We've provided some great resources for you to learn Lava on our website.

Lava Shortcodes

Shortcodes are a way to make Lava simpler and easier to read. They allow you to replace a simple Lava tag with a complex template written by a Lava specialist. This means you can do some really powerful things without having to know all the deals of how things work.

For example, instead of writing out Lava code to display a Google map with custom pins and styles, you can insert a Lava shortcode where you want the map to be displayed, and let Rock do the work for you. Rock will replace the shortcode with the full Lava code, which will then be displayed as a customized map when rendered by the browser. Shortcodes put the power of Lava in your hands without you needing to be a coding expert.

To learn how to create and use Lava shortcodes, check out `The Long & Short on Shortcodes`.

Less is More

The chapter title, while cheesy, is very true! Less is a technology that brings scripting capabilities to CSS. This allows you to do things like create variables and reusable styling nuggets (for a complete overview of what is possible see the Less website at lesscss.org.) The power of Less has always come at the price of having to manually compile your Less files to CSS, that is until Rock came to town. In fact, Rock has several different tools to help you keep your Less files compiled. Let's crack open the toolbox and see what we can do.

Methods to Compile

Compiling on Start

By default Rock will compile all of the master .less files found in the theme folders. A master file is one that does not start with an underscore. Each of these masters will be compiled to ensure that the latest compiled CSS is available after each update and Rock Shop install.

> #### Performance Is Unaffected
> If you care about performance as much as we do you might be concerned about slowing down the startup time. We've taken that into consideration and perform the Less compile on a separate thread.

Compiling from the Site Detail Page

You can compile the Less files for a specific site at any time from the Site detail page found under `Admin Tools > CMS Settings > Site > Site Details`. From this page you will notice the *Compile Theme* link on the right side. Clicking this link will compile the site's Less files.

Using the Theme Styler

A theme's Less files can also be compiled by the built-in Theme Styler found under `Admin Tools > CMS Settings > Themes`. From this page you will see a grid that lists each theme. Next to each theme is a compile button. For more information on this page see the Theme Styler section below.

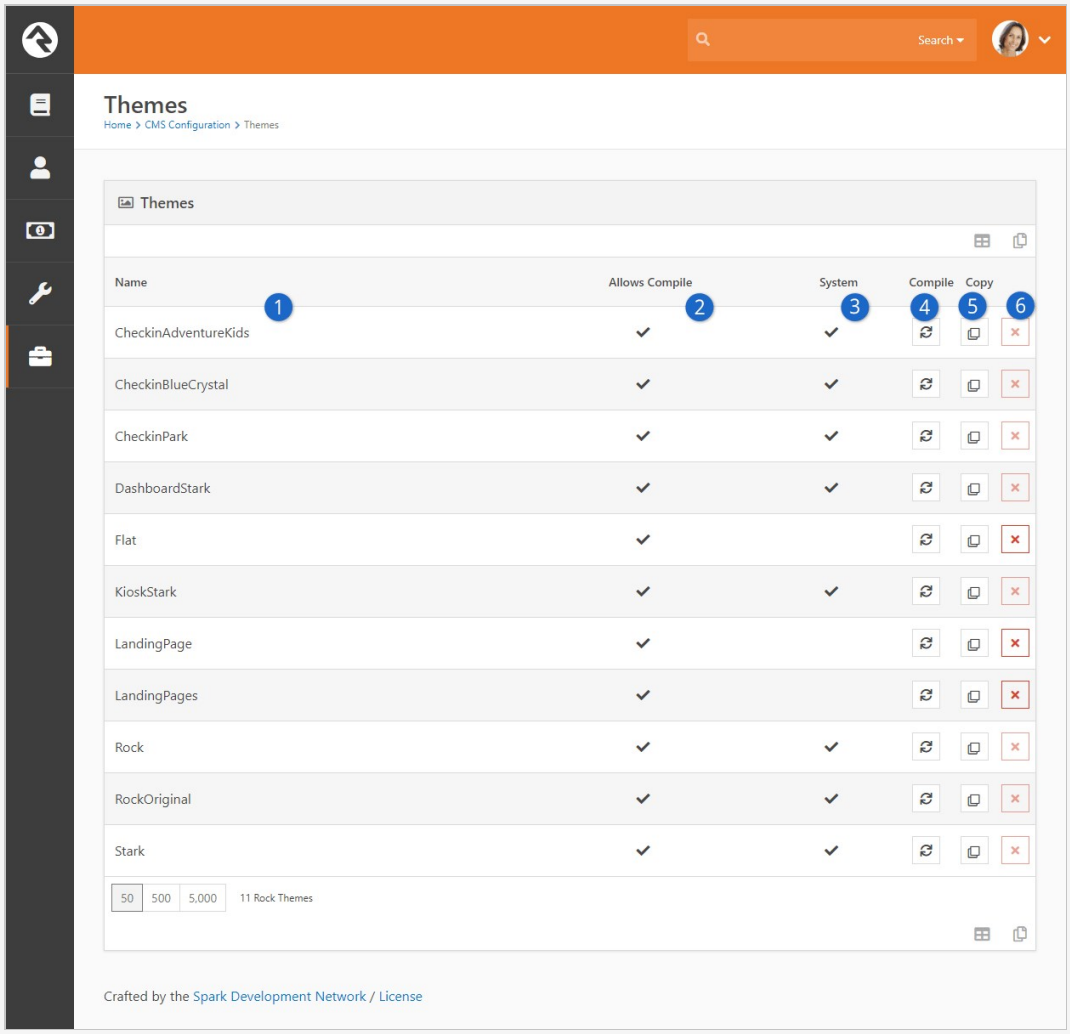
Themes

As we've already seen, the Theme Styler provides an easy way to compile our themes. That's just scratching the service though of what's possible. Let's now do a bit deeper into all of the power of Rock's theme tools.

Theme List

You can view a list of installed themes under `Admin Tools > CMS Configuration > Themes`.

Theme List



1. **Theme Name**
   Pretty obvious...the name of the theme.

2. **Allows Compile**
   A theme designer can keep a theme from being compiled by Rock. This is rare and is usually only done for internal themes developed for a specific organization.

3. **System**
   This notes that this theme is a system theme that came with Rock. These themes cannot be deleted.

4. **Compile**
   This button allows you to manually compile a theme.

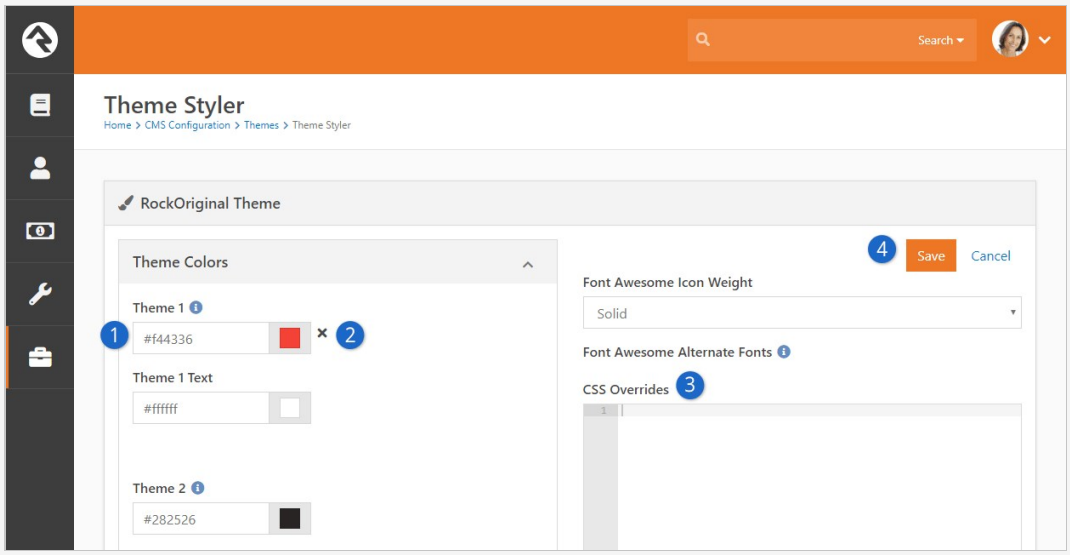
5. **Clone**
   This button allows you to copy the theme to a new theme with a name of your liking. This allows you to change it without worrying about effecting others.

6. **Delete**
   This button allows you to delete the theme.

Theme Styler

Selecting the theme from the list will take you to the Theme Styler. Below is the theme styler for the default internal Rock theme.

Theme Styler



1. **Theme Variables**
   You'll notice that theme designer has provided several variables for you to modify. These variables allow several different customizations. Some you'll notice allow you to choose colors. Others modify fonts, images and units of measure.
2. **Variable Refresh**
   After changing a variable you'll notice a small *x* next to it next time you enter the theme styler. Selecting this *x* allows you to return the value back to its original state. Be creative... you can always go back to the default if you don't like your selection.
3. **CSS Overrides**
   You may find that there is no variable for the change you want to make. Never fear, you can enter any overriding CSS in this box. It will be placed at the bottom of the compiled CSS to ensure that it gets the last say on how an element should be styled.
4. **Save**
   Pressing the save button will not only save your changes, but also compile the Less file to CSS. If you're editing the internal Rock theme you'll notice your changes right away!

Not All Themes Support Variables

It is up to the theme developer to add support for modifying variables. You may encounter some themes that do not support changing the styling.

Font Awesome 5

Font Awesome 5 is a revolutionary step forward in font-based icons for the web. With these new capacities, though, come some complexities. First let's look at some of the new features and discuss how they will be implemented in Rock.

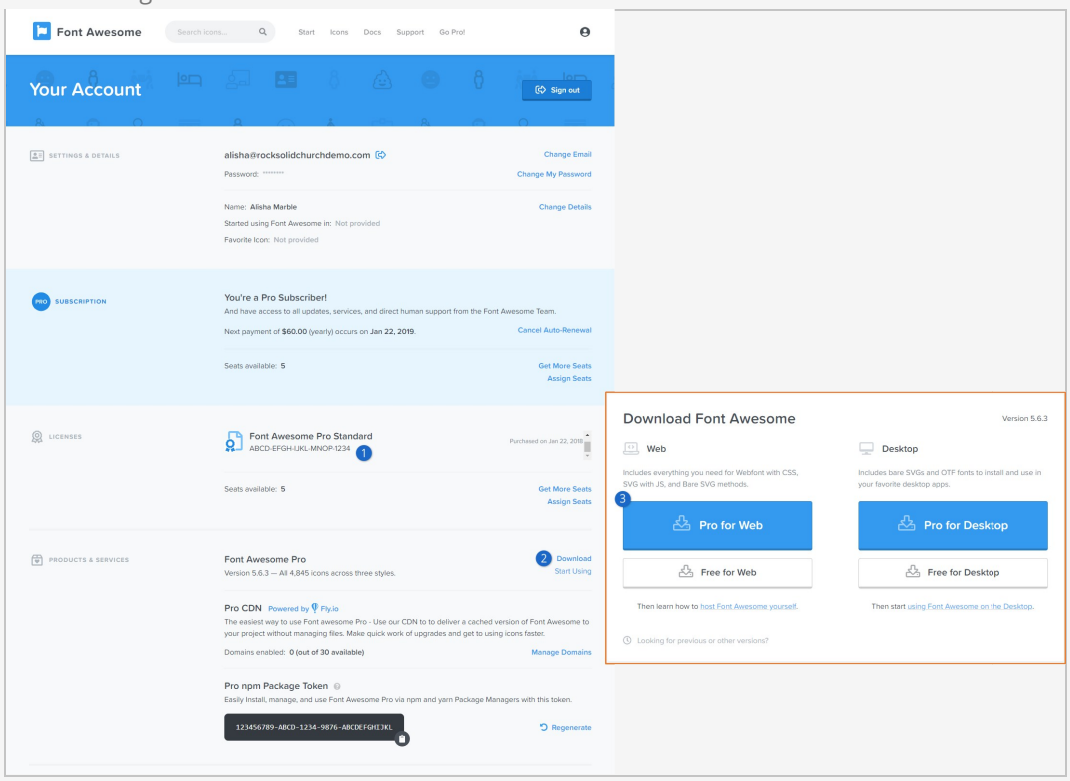
Free vs. Pro

Font Awesome has always been free and will continue to be so. In version 5 they are also offering a Pro version. The Pro version gives you not only tons of new icons, but different weights (solid, regular and thin) as well. While the free version does have two weights, only the solid weight is icon complete (has all the icons implemented). Because of this, "solid" is the only choice in Rock if you have the free version.

Installing Font Awesome Pro

If you do purchase the Pro version (again, this is completely optional), you'll now need to install it in Rock. To start, you will need to log in to your account at fontawesome.com. You'll need to get both your Key and the Pro Download file. See the below screenshot to make sure you're getting the right items:

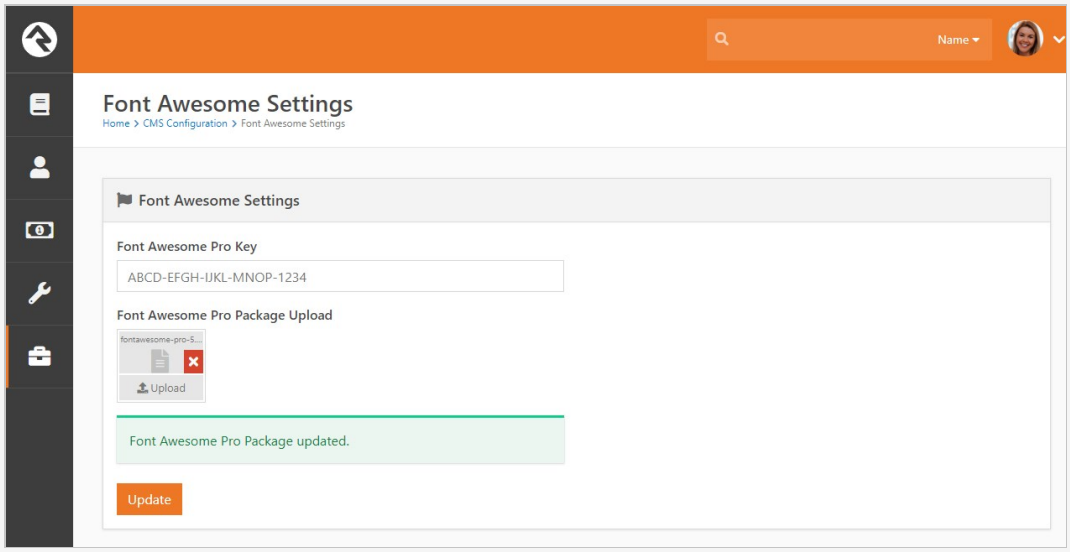
Downloading Font Awesome Pro



1. **Key**
   First, take note of your Font Awesome Pro key in the "Licenses" section. You'll need this in a minute
2. **Download link**
   Next, click the download link for Font Awesome Pro from the "Products & Services" section.
3. **Pro for Web**
   You'll need to click on the "Pro for Web" file on the page that opens, shown here.

Now that you have your key and the .zip file, log in to your Rock site and navigate to `Admin Tools > CMS Configuration > Font Awesome Settings`. This is where you'll paste in your Font Awesome Pro Key and upload the Font Awesome Pro for Web package that we just downloaded. Then click `Update` and it will tell you that Font Awesome Pro has been updated. You'll need to do this again from time to time as Font Awesome adds new icons to their Pro package.

Installing Font Awesome Pro



Font Weights

As we mentioned above, you need the Pro edition to have access to the various font weights in Rock. Currently, there are 3 weights: solid, regular and thin. It's our intent to allow you to pick a weight and have the theme auto update to show your selected weight.

Each of the weights is implemented in a separate font file. There is also a separate font file for all the brand icons. To reduce page load times, we allow you to select which fonts you'd like to implement on your theme.

Font Awesome 5 added the ability to specify the weight of the icons in CSS. So, if you wanted a light icon, you'd use "fal fa-cog." However, this hard-codes the icon to always be light. Instead of using the weight classes, we highly recommend that you continue to use the normal `fa` prefix (e.g. `fa fa-cog`). This will allow Rock to dynamically change the weight based on administrator preference.

SVG Fonts

You might be asking, "What about SVG fonts? There are a bunch of new features that only they support!" At this point, we have not supported the Font Awesome SVG fonts natively in Rock. While that might change in the future, the community felt that the increased file sizes of the SVG font files was a concern and that the traditional font files were a better option for now. We hope that Font Awesome will have a solution to these concerns in the future.

Other Features

Font Awesome 5 has a ton of other features that you should read about on their website.

Custom Themes

If you are writing a custom theme you can select to either hard code your theme to use a specific weight of Font Awesome or plug into Rock's theme customizer to allow Rock Administrators to update it from the UI. Both options are discussed below. Note that if you don't do anything, Rock's core Bootstrap implementation will include the solid weight for you.

Hardcoding Font Weights

Don't trust the administrators not to ruin your perfect theme by changing the font weight? No

problem. You can hardcode the weight using the following custom mix-in.

```
@import "../../../Styles/FontAwesome/_rock-fa-mixins.less";
.fa-font-face( 'thin' );
```

The mix-in is really the last line of code. It will write out the font face for you. You can write out more than one if you wish by calling the mix-in several times. The only parameter for the mix-in is the weight (solid, regular or thin).

Allowing for Weight Changes

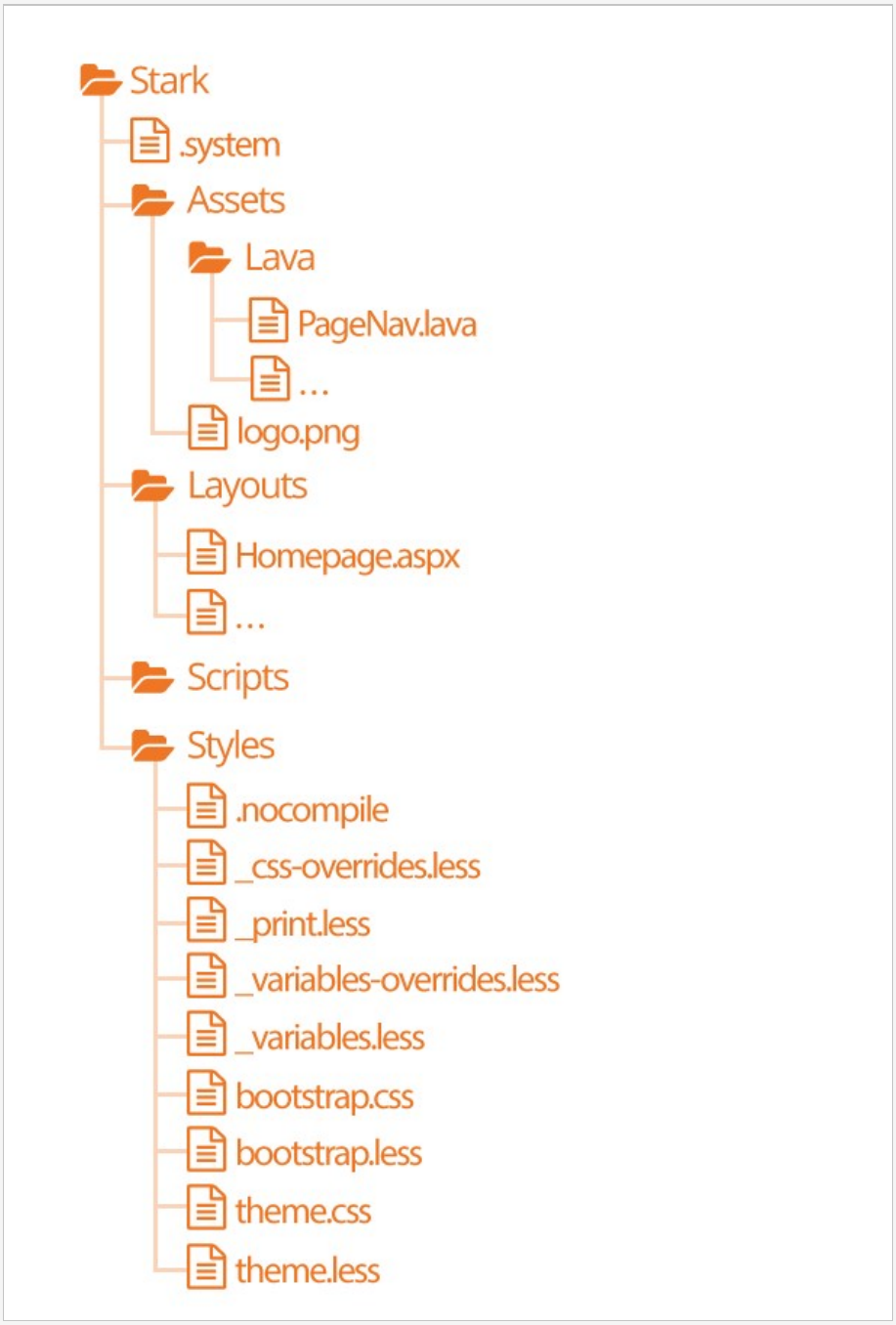
So, you'd rather take the high road, good... good... Well, honestly, supporting the ability to change the weight of the icons is super simple. Just ensure that your theme includes a _variable-overrides.less file and that this file is imported into your bootstrap.less and theme.less files. The Rock UI will then write into this file the configuration needed to allow administrators to select the weight of fonts they prefer.

Designing Themes

Themes are a beautiful thing. They allow you to quickly and easily change the look of your site using the latest web best practices. Before we get too far, let's look at the contents of a theme.

Contents of a Theme

Theme Directory



- The *.system* file tells Rock that this theme is a system theme. This prevents it from being deleted in the Themes list.
- The *Assets* folder is used for all of the images, icons and other support files needed by your theme. This folder also contains a *Lava* child folder for all of the Lava files needed for your theme.
- The *Layouts* folder contains all of the layouts your theme supports. For external sites, your theme should define implementations for all of the standard layouts covered in the Looking Deeper At Layouts chapter.
- The *Scripts* directory will be used for any custom scripts your theme requires. Be sure to only place unique scripts here that are not contained in the global scripts folder.
- Finally, the *Styles* folder contains all of the files needed to generate your CSS. Specifics of

these files is discussed in depth below.

> **Using Images in Themes**
> When using images in your theme design, they will typically be implemented as an IMG tag or a CSS background. Use of an IMG tag, with accompanying ALT attribute text, is optimal if the image is part of the page content or has semantic meaning. This will allow search engines as well as screen readers to interpret the image.

Stark

No, this is not our Ironman theme, but this theme will become your go-to for custom theme development. Stark gets its name from the fact that it is basic and minimally styled. In fact, it comes with the least amount of styling possible. We created it as a starting point for you to create new works of art. Think of it as your blank canvas.

To start a new theme you should start by copy/pasting the Stark theme and then renaming it. Then start restyling the theme using the .less files.

> **Warning**
> Because the Stark theme will be updated with future versions of Rock you won't want to make changes to this theme. Instead copy and paste the Stark theme to create your own theme.

How Rock Uses Less

There are two sets of .less files. Those in the core *Styles* folder and the theme .less files. The purpose of the core styles is to provide the basic structure and look/feel to the various Rock blocks. The theme's .less files add the final polish to the blocks and override any of the CSS attributes you desire. Let's take a quick look at each Less file that makes up a theme.

- **.nocompile:** This file tells Rock's Less compile tools to ignore this theme. This file should only be used in cases where a custom theme designer wishes to manually compile the theme's Less files (rare).
- **_css-overrides:** This file contains the Theme Styler's CSS overrides. It should not be manually edited.
- **_print.less:** This Less style file helps set specific print styles that make Rock pages look better when printed. The contents of this file are imported (appended) into the theme.less file. For the most part, you should not need to modify these styles unless there is a specific print styling you would like to add.
- **_variable-overrides:** This file contains the Theme Styler's variable overrides. It should not be manually edited.
- **_variables.less:** This is a very powerful file. It contains a rather large list of style settings that you can change. Simply changing a couple of colors can make your theme match the brand colors of your organization. We highly recommend that you make a copy of the Stark theme and start playing with the variables in this file. You'll be surprised how easy it is to make some dramatic changes.
- **bootstrap.less:** This is the core Bootstrap Less file. You should not change this file. If you need to modify a style setting in Bootstrap you should either identify the variable that Bootstrap uses to control that style in the _variables.less file or write a specific override in

your theme.less file.
- **theme.less:** This is the file that contains all of your theme's custom styling. If you can't style it with a variable change in the _variables.less file it should be added here.

Once you make changes to your Less files, you'll need to compile them to .css files for the browsers to use. There are a number of Less compilers you can use for this.

Themes Are More Than Looks

Keep in mind as you develop your theme that you need to be concerned more than than just how your theme looks in the visitors browser. You should also be testing to ensure your theme works well with Rock's in-page editing features. Zone and block editor features should work well with your theme to allow web administrators access to edit the pages.

To help you with this Rock will add classes to the <body> tag when the zone and block editors are enabled. These classes are 'zone-highlight' and 'block-highlight' respectively. With these classes you can adjust your layouts when these editors are at work.

Rock will also add the class 'modal-open' to the <body> tag when a modal is open. This allows you to do special styling when this event occurs.

Lava

Every theme should include some implementations of the standard Lava files in the theme's ./Assets/Lava folder. Each of these files is covered below.

- **AdList.lava:** This is used to render HTML for the various lists of ads on pages.
- **AdDetails.lava:** This is used to render HTML for the details of a specific ad.
- **AdRotator.lava:** This provides the markup for the large ad rotator on the homepage.
- **BlogItemList.lava:** Renders markup for a list of content channel blog entries.
- **BlogItemDetail.lava:** Renders markup for a content channel blog entry.
- **PageListAsBlocks.lava:** This Lava is for rendering a list of pages as blocks like the ones on the various *Admin Tools* pages.
- **PageListAsTabs.lava:** This renders markup for showing a list of pages as a Bootstrap tab or pill navigation.
- **PageNav.lava:** Used for a page's main navigation.
- **PageSubNav.lava:** Renders markup for a page's sub-navigation.
- **RSSFeed.lava:** Renders markup for a content channel RSS Feed.
- **RSSFeedItem.lava:** Renders markup for an item in a content channel RSS Feed.

Testing Your Theme

As you're working on your theme you might be wondering how you can view it without everyone seeing what you're working on. Well prepare to have your mind blown. Because you're a Rock Genius, you know that when a page loads it gets the active theme by looking at the site's theme setting. Pretty simple. You can, however, override this setting by adding the query parameter theme='themename'. For instance if your page is available at:

http://www.rocksolidchurchdemo.com/page/1
you can have that page display your new theme by typing in:
http://www.rocksolidchurchdemo.com/page/1?theme=MyStarkTheme

The best part is that only you will see it. Everyone else will see the current theme defined on the site. Pretty James Bond, huh?

> **Important Note About Rock's Less Compiler**
>
> As a theme developer it's your responsibilty to ensure your theme compiles correctly with Rock's Less compiler. Most client based compiler use the same Javascript based Less compiler provided by the Less reference organization (http://lesscss.org/). Because Rock needs to compile the Less on the server it uses a C# implementation called dotLess. DotLess does a good job, but it is a little less forgiving with things like circular variable referencing. Also, since the compiling is done on the server, it's more difficult to present Less errors.
>
> Please take time to ensure that your Less is compiling correctly before moving it to the server or publishing it to the Rock Shop.

As an example to the warning above if you're using certain CSS filter you may find that you need to escape them. For instance if you add the CSS below:

```
.item { filter: blur(8px) !important; }
```

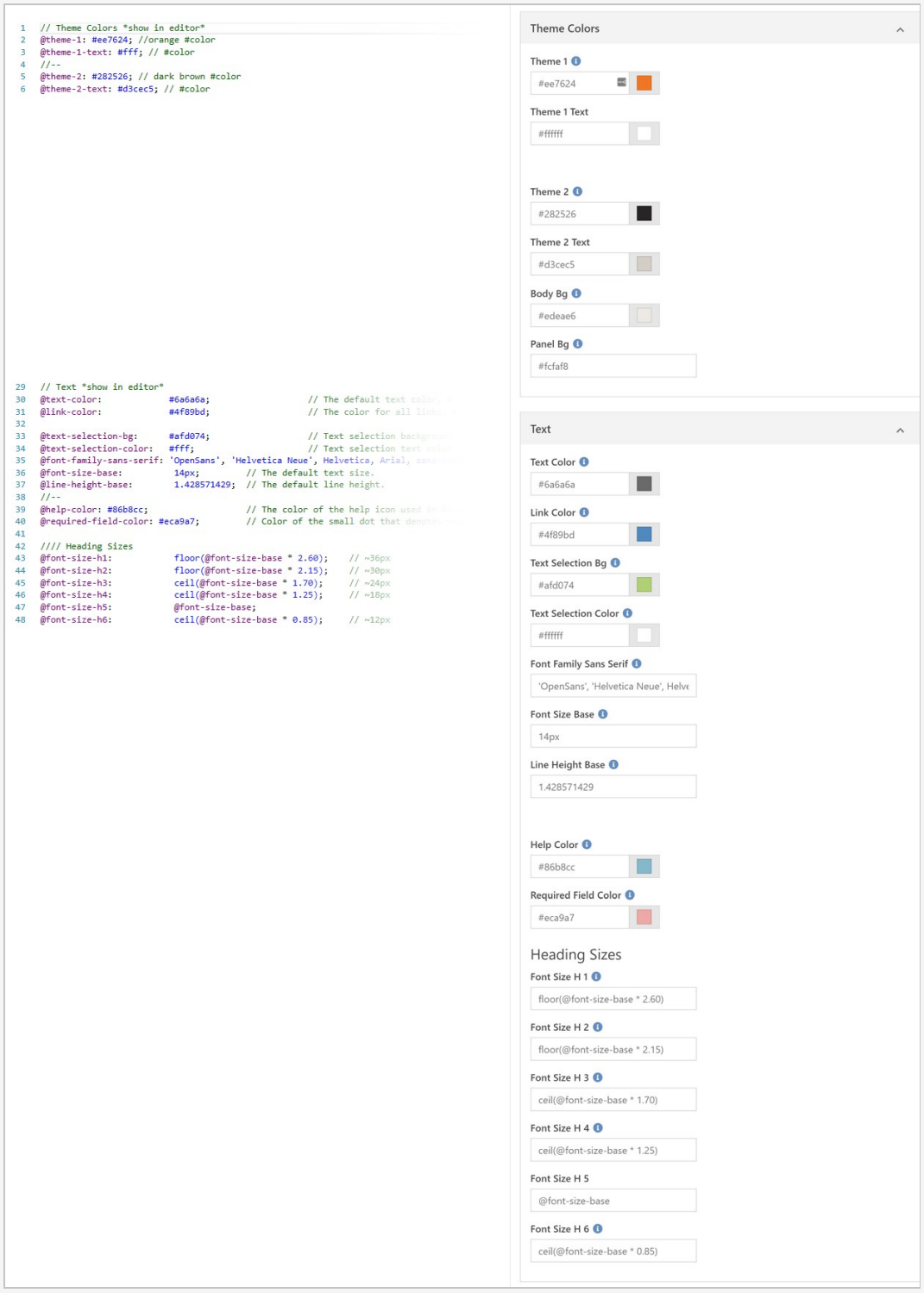
You may find that your compiled CSS is blank. To fix this you'll need to escape the filter using by appending a ~ and wrapping the filter in quotes like:

```
.item { filter: ~"blur(8px) !important"; }
```

Theming for the Styler

As you have already seen, Rock's Theme Styler is a powerful tool for allowing others to edit your theme. It's easy for you to enable others to change your theme by making a few small changes to your *_variables.less* file. Below is a side-by-side comparison of the *_variables.less* file for the internal Rock theme and the UI created from it in the Rock Styler.

_variables.less File for the Rock Theme



Let's look at a few lines to see how the *_variables.less* file is magically transformed into this nice editor.

- **Line 1:** Adding a '//' followed by text will create a new variable grouping. To turn this grouping into a panel in the styler you'll also need to append **show in editor**. This allows you to also create groups that are not editable.
- **Line 2:** Line two and we're already adding our first variable. The label for the variable will be the variable name (minus the @ character). All dashes in the variable names will become

spaces. The values in the comments will be used for the help text. Finally, if the comment ends with #color, Rock will render it as a color field. The color field is smart enough to render as a plain 'ol textbox if it contains less functions like darken.

- **Line 4:** Placing the characters '//--' will insert line breaks in the editor. This allows you to easily sub-group your variables.
- **Lines 7-28** These lines were omitted to simplify the illustration.
- **Line 29:** Note that there is no end marker for variable groupings. When you're done with one, simply start a new one.

Lava On Layouts

As you create your themes and layouts you might start to see a pattern of having to create HTML blocks to provide content that won't change often. For example you might add an HTML block at the top of every page to place an image from a page attribute, or some sort of welcome message. Luckily, there is a way of adding content using Lava right on your layout. (You've always been able to do these types of things in C#, but honestly, who wants to resort to C#?!)

When creating your layouts you can add Lava right in your .aspx files. To do this use the *Rock:Lava* tag. Below is a quick example of what you can achieve.

Sample Lava Template on a Layout File

```
<Rock:Lava ID="lavaHeader" runat="server">
    {{ CurrentPage | Attribute:'HeaderImage' }}

    {% if CurrentPerson %}
        Hello {{ CurrentPerson.FullName }}
    {% endif %}

    {% cache key:'external-header-grouplist' duration:'3600' %}
        {% sql %}
            SELECT [Id], [Name] FROM [Group]
            WHERE [GroupTypeId] = 25 AND [IsActive] = 1
        {% endsql %}


        {% for group in results %}
            {{ group.Name }}
        {% endfor %}
    {% endcache %}
</Rock:Lava>
```

The example above is a bit of a kitchen sink script showing all sorts of functionality. Let's look at some of the features packed in there to see what's possible

- **Page Attributes:** One of the best uses of Layout Lava is interacting with page attributes. It's a great idea to add a page attribute for things like page header images. You can then place them right on your layout. Bonus points if you provide a default image in your attribute settings so if a page doesn't provide an image a default one is used instead.
- **Custom Messages** Remember, this is Lava. You have access to common objects like the *CurrentPerson*. Use this for your fame and fortune.
- **Lava Commands** We assume that anyone who is allowed to edit a file on your server has administrative rights (because they do, if your can edit a file on the web server you can pretty much do what you want if you know C#) so we've enabled all of the Lava commands when using Lava templates on the layout. This simple example lists all active small groups using the SQL command.
- **Think Speed** You want your website to be fast right? Think about how you can use the Lava cache tag to remember content that comes from the database. In this case we cache the group list for one hour (3600 seconds). Be careful though. You don't want to cache

personalized messages, or if you do use the two-pass option in the Lava cache command.

Things You Should Not Do

Rock is about freedom and empowerment. There are only a couple of things you should not do under any circumstances, for your own good.

1. **Update Global Styles:** You do not want to update any of the .less files contained in the ~/Styles/ folder. We guarantee that these files will be overwritten by each update. If you would like to override a specific styling you will want to do that in the CSS/Less files of your custom themes.
2. **Change the Rock Theme:** The Rock theme will also be updated in new releases. This theme serves the internal site and should not be altered.
3. **Change the Stark Theme:** The Stark theme will also be updated in new releases. If you would like to make changes to this theme please copy and paste it to create a new theme.
4. **Create a New Internal Site Theme:** If you would like to alter the look of the internal site, you could create a new internal theme. We highly recommend that you refrain from doing so. As we add new functionality we will be extending the internal theme to work specifically with these new features. It's likely that your custom internal theme will not have the correct styling to properly display these new pages and blocks. Remember this theme is only viewed by your internal staff and some volunteers. We recommend putting all your effort into your external themes which are viewable by a much wider audience.
5. **Add Scripts to the Global Scripts Folder:** You should not add any custom Javascript files to the *Scripts* folder located at the root of the file system. Instead use either the scripts folder under a specific custom theme or add a script folder in the *Plugins* folder.
6. **Use the External Site as Your Site:** You might be tempted to jump in and start using the external site that comes with Rock as your external (public-facing) site. Keep in mind that we add pages and blocks to this site as we create new features in Rock, and those changes could conflict with changes you've made. Think of the out-of-the-box external site as a "best practice" site to reference when you're creating your own site.

   To build your own site, you'll need to create a new site and start adding pages to it. If you want your site to start off like the one that ships with Rock, you can copy the External Homepage and child pages, then point them to the new site. This is similar to the process described for copying the Landing Page. As we add new pages and blocks to Rock, you may need to manually copy those pages or blocks to your new site to see the updates. Updates to existing blocks will generally not require any action unless, for instance, new required block settings fields are added.

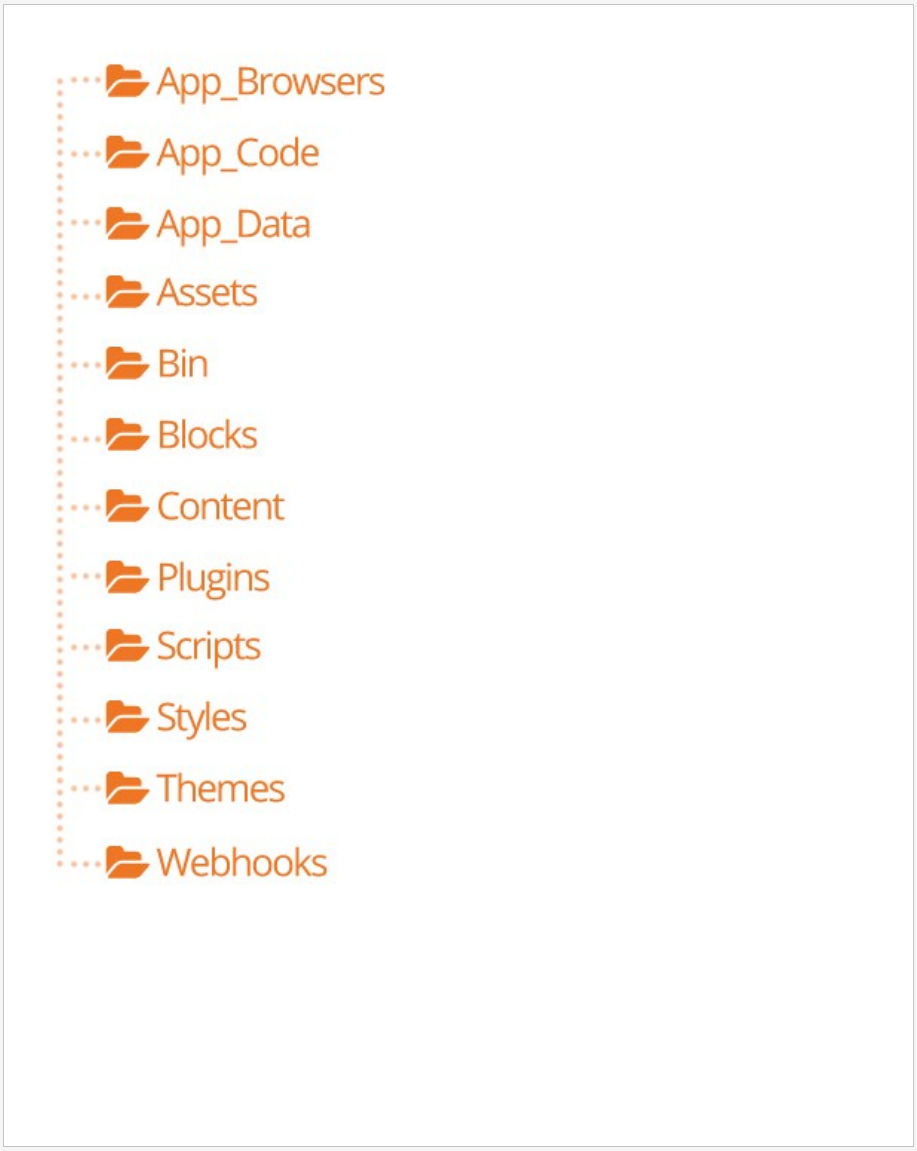
We have a few other suggestions for things to avoid in our `Admin Hero Guide`.

Rock Directory Structure

So now that you know the parts and pieces of Rock, let's learn where each lives.

Rock Folders

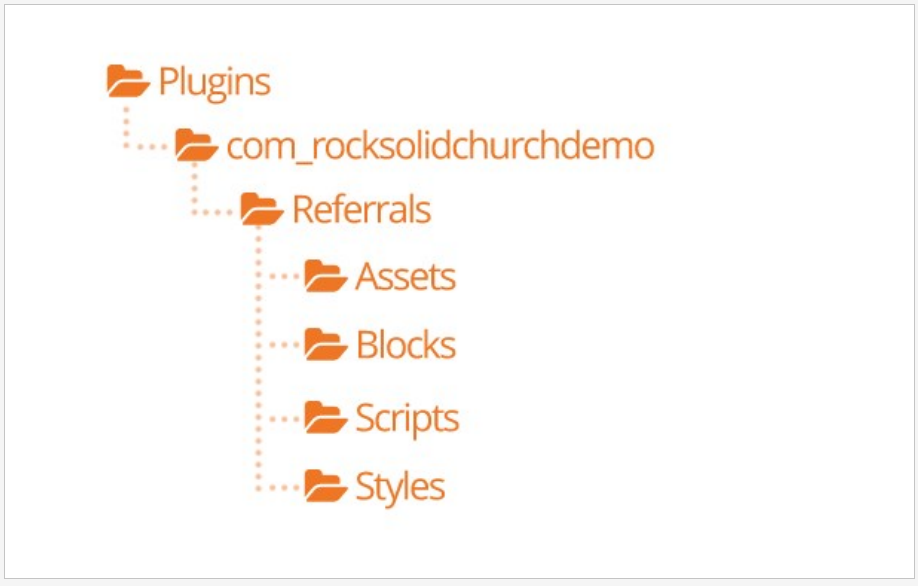
Rock Directory Structure



- `App_Browsers/` – You should not need to worry about this directory. It's a special directory that allows ASP.Net to identify specific browsers and determine their capabilities.

- `App_Code/` – This directory contains un-compiled code for Rock. You do not want to alter or add files in this directory.
- `App_Data/` – This directory allows you to store data without having to worry that a client could browse directly to it. For instance, Rock writes a log of severe error messages to this directory (specifically ~/App_Date/Logs/RockExceptions.csv). But, because the webserver blocks requests to access these files directly, you do not need to worry about someone being able to access them. You'll also notice that Rock keeps a cache of binary files in ~App_Data/Cache/. For the most part you don't need to know about this, but it's good to know how things work under the hood.
- `Assets/` – This is the global assets folder where Rock stores images, icons, fonts, etc. that are a part of the core install. You should refrain from storing your files in this directory.
- `Bin/` – ASP.Net keeps its compiled assemblies (aka .dlls) in this folder. If you have custom plugins with compiled assemblies, you'll want to add them here. Keep in mind that if you add/modify/delete any file in this directory Rock will restart which could impact people using Rock at the time. You should only do this after hours.
- `Blocks/` – These are the core Rock blocks. As you can see they are organized by function. You should not modify any of these blocks nor add your own. This location is reserved for the core blocks.
- `Content/` – This is where you'll add your custom content for your various sites. While it's up to you to determine the best file and folder structure, we recommend that you at least keep the content for the various sites separate. Over time these folders can get quite messy so it's best to come up with a good filing structure from the beginning.
- `Plugins/` – The plugins folder is where you'll place all of your custom blocks. The organization of the files in this folder is very important. To help keep things straight the following pattern should be used.

Plugin Directory Structure



1. The top-level should start with a reverse domain organization notation. For instance if your organization uses the domain rocksolidchurchdemo.org your top-level folder should be org_rocksolidchurchdemo.
2. Under your root folder you'll have a child folder for each plugin that you develop.
3. Under the plugin folder you'll have folders for things like Assets, Styles and Scripts.

You'll also put the blocks themselves in the root folder.

- `Scripts/` – This is the core scripts folder. You should not add scripts to this folder. Instead add your scripts to your custom theme folders.
- `Styles/` – The styles folder is for Rock's core .less files. You should not edit these files as they will be overwritten during updates. If you need to modify the properties of a certain style you should override them in your custom theme files.
- `Themes/` – This is the location of all the themes for your Rock install. See the Themes chapter for more information on themes.
- `Webhooks/` – Webhooks are HTTP handlers (Web 2.0 geek-speak for very basic webpages) that receive requests from Internet services like Mandrill and Twillio. For instance, Twillio will call a specific webhook every time someone responds to your SMS message to notify you of the details of the response. When you write a custom webhook you can place it in this folder.

Couple of Important Files

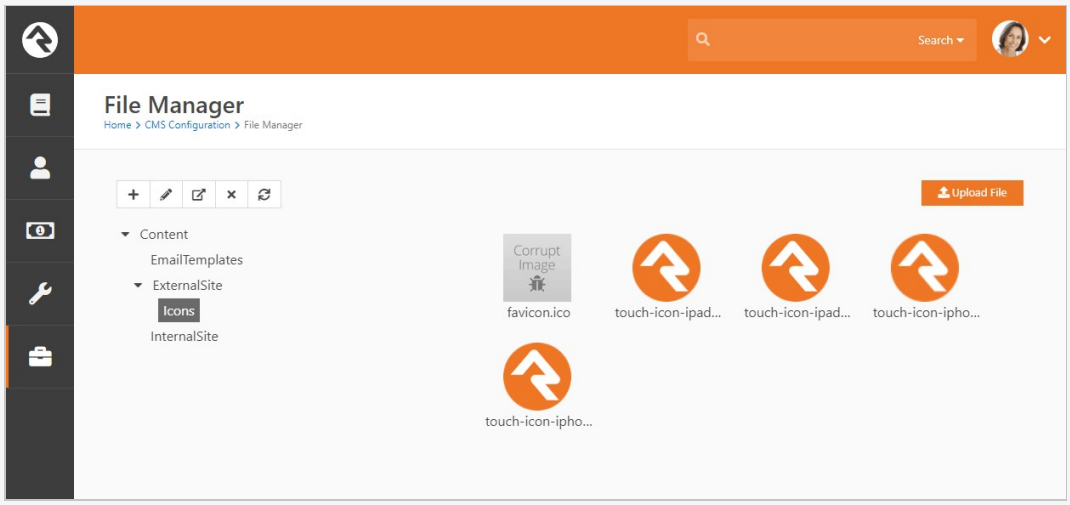
While we won't cover every file in the root Rock folder, below are a couple that you should be aware of.

- **License.aspx:** Rock uses several open-source projects in its core. Attribution for each of these projects is given here. We also note each of their licenses so as to show that our license (Apache) is not in conflict to theirs.
- **Web.config:** This is the core settings file for any ASP.Net application. Unless you know exactly what you're doing you should stay away from editing this file. Keep in mind that any change to this file will cause Rock to restart.

File Manager

The file manager provides a basic interface to help you to upload and delete files and manage directories without having to setup or share FTP credentials. Its root folder can be configured allowing you to enable a specific user or security role to manage a specific part of a folder heirachy. By default a File Manager block can be found `Admin Tools > CMS Configuration > File Manager`.

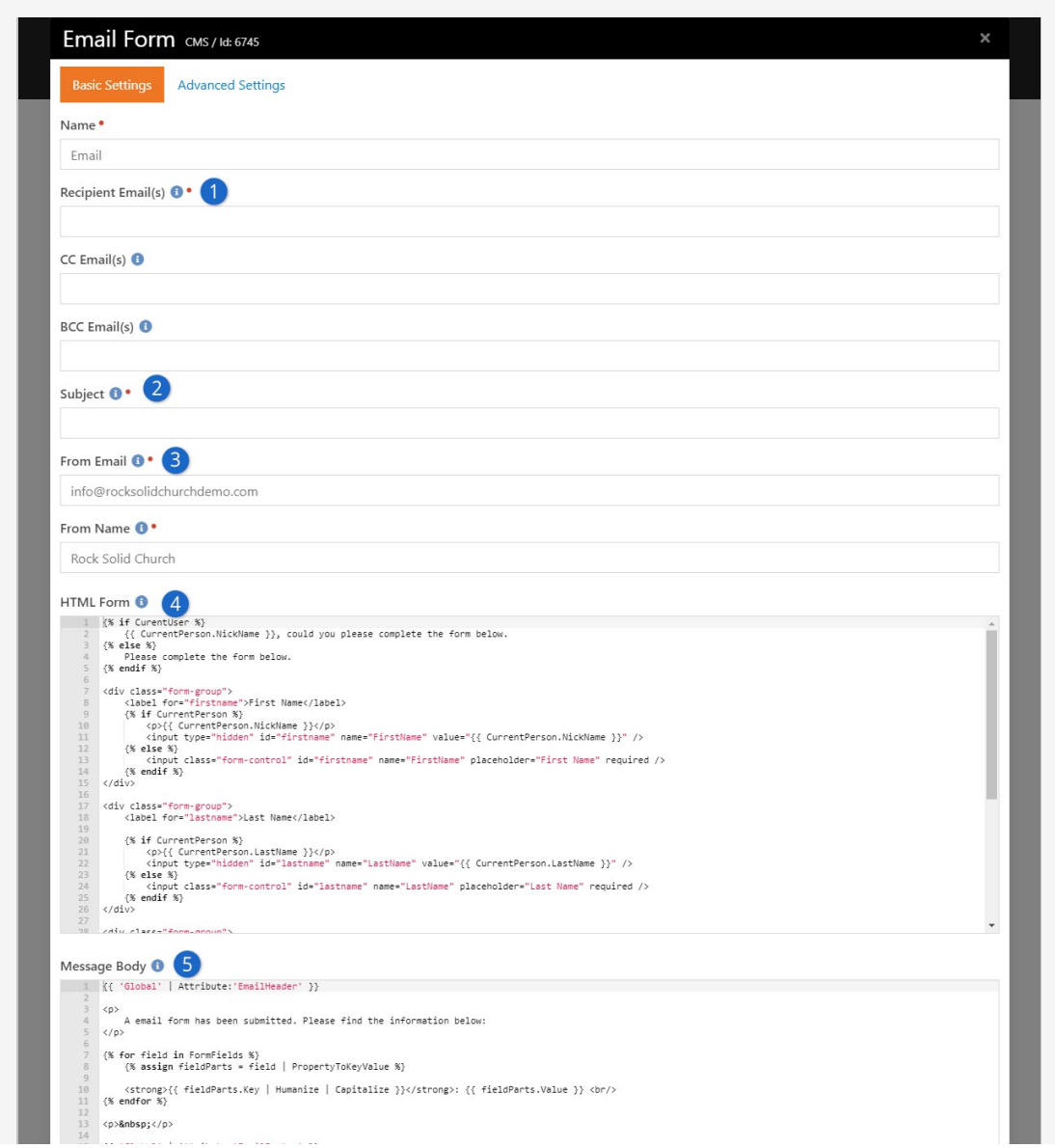
File Manager

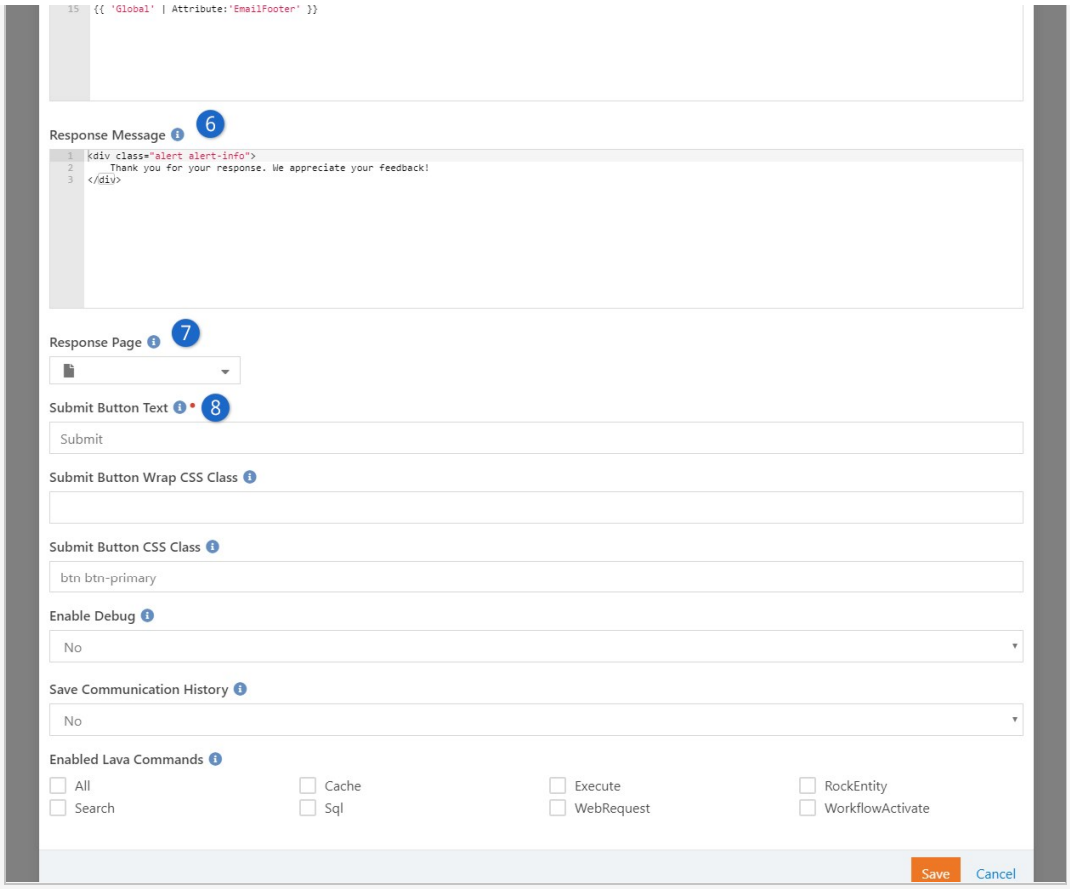


Email Form Block

Rock provides several tools to get information from your site's guests. The *Workflow Entry* block is super powerful because it can present fields to your guests and then launch a workflow based on their submissions. But sometimes you just need a simpler approach. The *Email Form* block is just that - simple.

This block allows you to show a simple, but customizable, form whose content will be emailed to a recipient of your choice. Once you add this block to your page, you'll notice it has several block settings so that it can be easily customized. Let's take a detailed look at each one.





1. **Recipient Emails**
   This is a comma delimited list of people who should receive the contents of the submitted form.
2. **Subject**
   The subject line of the email.
3. **From Email**
   The email address to send from.
4. **HTML Form**
   This is the form that will be presented to the user. Don't miss the tips below for setting up your form.
5. **Message Body**
   This is the body of the email. The default body copy we've provided should work great in most cases, but feel free to edit it.
6. **Response Message**
   The message the guest will see after submitting the form. You can use Lava merge fields here to help personalize your message.
7. **Response Page**
   If you'd prefer to send the guest to a different page after they submit their information, you can provide the page URL here.
8. **Submit Button Text**
   Here you can define the text that will be shown in the submit button.

Tips for Creating Your Form

When you're creating your form you can use any HTML you'd like. We provide an inclusive sample that shows you many of the advanced features. Below are a few points to consider:

- You have access to Lava in your form. If the guest is logged in, you can personalize your message.
- If they are logged in you can also pre-enter many of the fields. In some cases you may want to simply add their name to the name field and allow them to change it. In other cases you can put their information in as text that can't be changed. When you do this you can pass the value of their name in a hidden field. The sample shows both cases. It's up to you to determine which one will work best.
- Your email form can include attachments. This is shown at the bottom of the sample form.
- You do NOT need to have an HTML
  tag in your markup. Don't add one or you'll break the page.

Persisted Datasets

Extensibility and performance are often in conflict. Some large datasets can be resource intensive process, so users might be left waiting seconds, or even minutes for results. Other datasets, like getting an attribute of another attribute, might perform adequately, but cause issues at scale. With Persisted Datasets you can shape data for speed and reuse demanding queries without worrying about performance.

By simply caching data as JSON you can re-use it for later transformations (website, app, etc.) without having to rebuild it from scratch. Persisted Datasets are cached on the database or in memory and can be called by Lava filters to transform data for as many uses as you can think of.

How Persisted Datasets Work

Let's take a look at what makes Persisted Datasets tick.

Output

To output a persisted dataset, you just need to use the `PersistedDataset` Lava filter, that looks something like this:

```
{%- assign data = 'mydataset' | PersistedDataset -%}
{%- for item in data -%}
  {{ item.Title }}
{%- endfor -%}
```

In the above example, `mydataset` is the name of the Persisted Dataset *Access Key* and `data` returns the data contained in the dataset. You can find more information on how to use the `PersistedDataset` Lava filter in the How to Use It section below.

Behind the Scenes

To create a Persisted Dataset, you'll use a Lava-based build script to create JSON, which is then stored in memory.

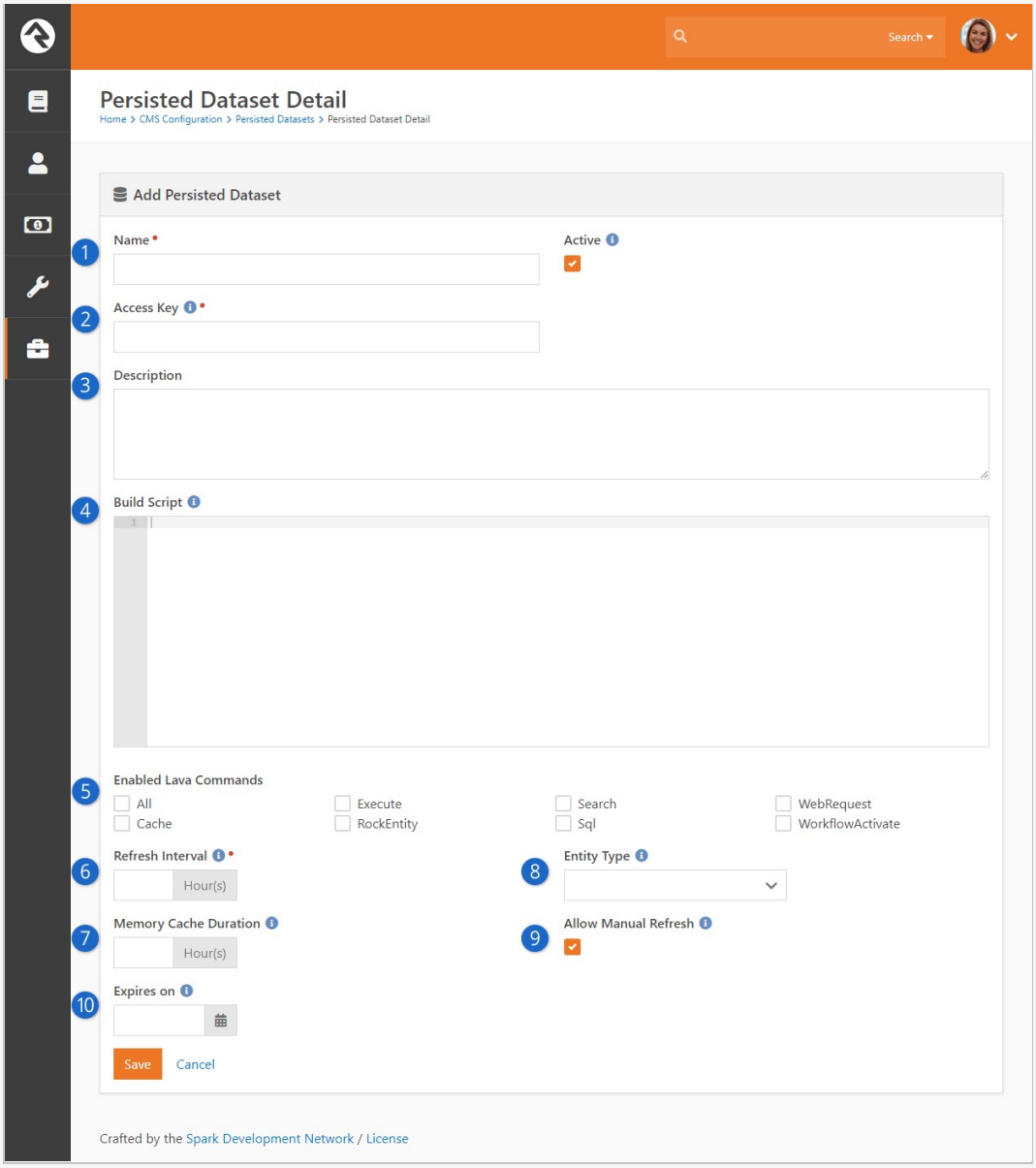
```
[
    {% campus where:'Id != "0"' %}
        {%- for item in campusItems -%}
            {
                "Id": {{ item.Id | ToJSON }},
                "Name": {{ item.Name | ToJSON }}
            }{%- unless forloop.last -%},{%- endunless -%}
        {%- endfor -%}
    {% endcampus %}
]
```

Because this is Lava-enabled, you have access to all the power of Lava, including SQL, Entity Commands, Execute and Web Requests.

How to Use It

Let's see how to actually set up your first Persisted Dataset. In your Rock instance, go to `Admin Tools > CMS Configuration > Persisted Datasets` and create a new dataset. You'll see the screen pictured below.

Add New Persisted Dataset



1. **Name**
   Choose a memorable name to use for organizing your Persisted Datasets.

2. **Access Key**
   The Access Key uniquely identifies the dataset. This will be the key to use when using the `PersistedDataset` Lava filter.

3. **Description**
   Include a note about the information you're storing and where it's being used. Your future self will thank you for providing an informative description.

4. **Build Script**

Provide the Lava Template to use for building the JSON that will be used as the cached dataset object.

5. **Enabled Lava Commands**
   Use these settings to control what code can run inside of your build script.

6. **Refresh Interval**
   Since Persisted Datasets are cached, use the *Refresh Interval* to decide how often data is updated.

7. **Memory Cache Duration**
   Because Persisted Datasets are generally stored in memory, the duration allows you to automatically remove a dataset from memory after the specified number of hours. For example, if you were to set the field to "24" and the dataset was not accessed for over 24 hours, the data would be removed from memory. This frees up memory for other tasks and keeps Rock running fast.

   This is a sliding timeline, so each time the object is read the counter will reset. You can also leave this field blank to not cache the object in memory, which means it will be deserialized into the object on each request (still fast).

8. **Entity Type**
   The JSON object will be associated with the Entity Type selected here.

9. **Allow Manual Refresh**
   If you need to force a dataset to use the most recent data, enable this setting and Rock will add a button to the list view grid to manually update data.

10. **Expires on**
    The dataset will not return data and won't be updated by the refresh job after this date.

Building Persisted Dataset Lava

The Persisted Dataset *Build Script* is Lava that has been specifically formatted to output as JSON. You'll need to format your *Build Script* to create properly formatted JSON that Rock can then deserialize. So, when you're creating a *Build Script* using Lava, keep a few things in mind:

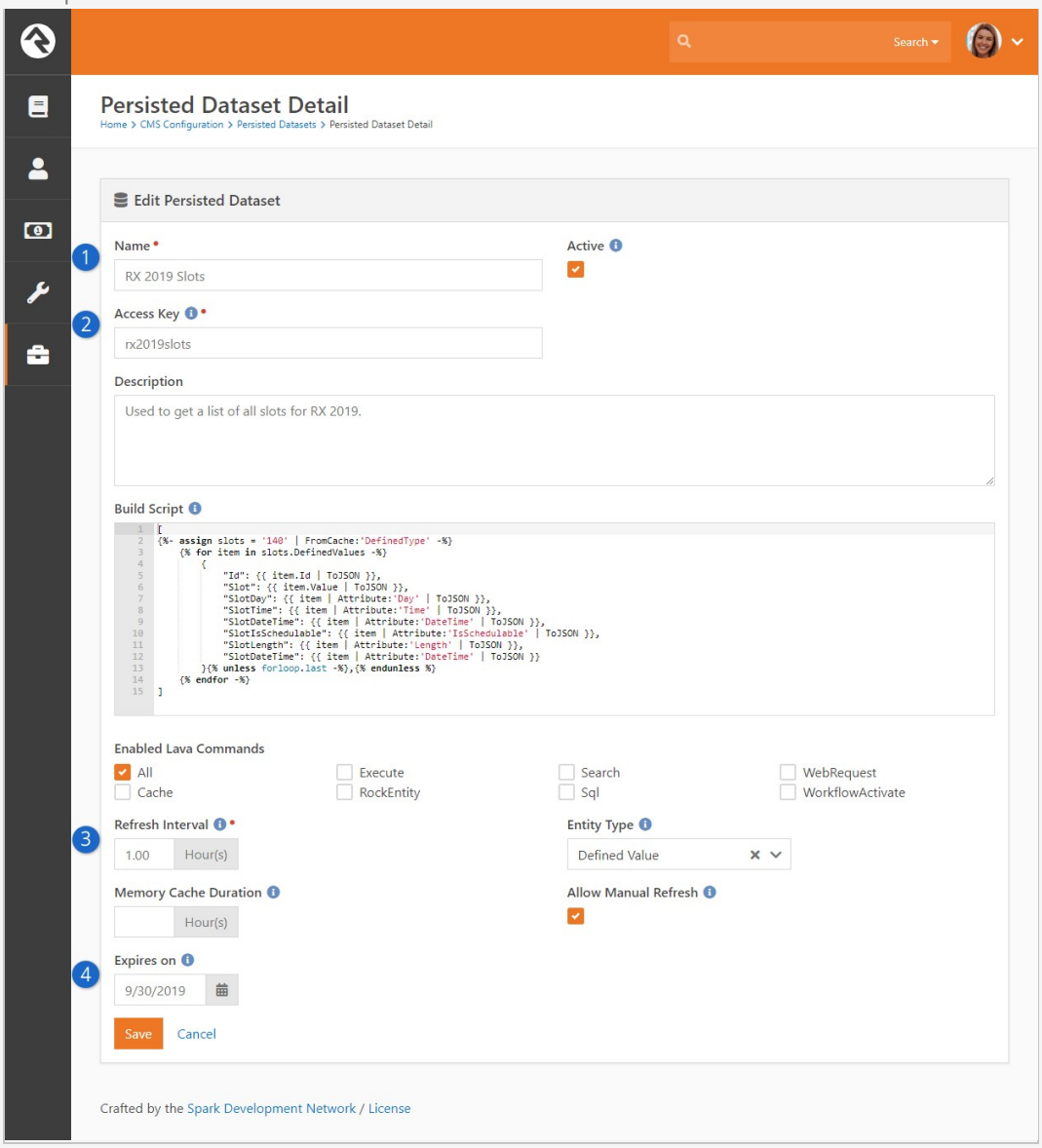
- When outputting values use the `ToJSON` filter, which automatically sanitizes and formats your output. For example, `"Name": {{ item.Name | ToJSON }}` will output `"Name": "Phoenix Campus"`.
- You'll need to add commas between values to create valid JSON.
- Your build script is compiled once, and the Lava should not be customized per user.

Example Build Script

```
[
{%- assign slots = '140' | FromCache:'DefinedType' -%}
    {%- for item in slots.DefinedValues -%}
        {
            "Id": {{ item.Id | ToJSON }},
            "Slot": {{ item.Value | ToJSON }},
            "SlotDay": {{ item | Attribute:'Day' | ToJSON }},
            "SlotTime": {{ item | Attribute:'Time' | ToJSON }},
            "SlotDateTime": {{ item | Attribute:'DateTime' | ToJSON }},
            "SlotIsSchedulable": {{ item | Attribute:'IsSchedulable' | ToJSON }},
            "SlotLength": {{ item | Attribute:'Length' | ToJSON }},
            "SlotDateTime": {{ item | Attribute:'DateTime' | ToJSON }}
        }{%- unless forloop.last -%},{%- endunless -%}
    {%- endfor -%}
]
```

Now that you know a little bit more about how Persisted Datasets work, let's take a look at a specific example. A good use case is displaying the output of timeslots for a conference. From the example pictured below, there are a few details we want to point out.

Example Persisted Dataset



1 **Name**
We set the *Name* to "Conference Schedule Slots" so we can easily identify what this Persisted Dataset is used for.

2 **Access Key**
Like the *Name*, the *Access Key* "conferenceslots" makes it easy to identify the purpose of this Persisted Dataset. The *Access Key* and *Name* don't need to be identical but should be closely related.

3 **Refresh Interval**
This script will refresh every hour, ensuring up-to-date information around the clock.

4 **Expires On**
The date we set here is the last date of our conference, since we won't need this after our conference ends.

Given the example *Build Script* pictured above, you could use the Lava shown below to output to

your page:

```
{%- assign slots = 'conferenceslots' | PersistedDataset -%}

     {%- for item in slots -%}

   • {{ item.Slot }} ({{ item.SlotTime }} minutes) - {{ item.SlotDateTime }}

     {%- endfor -%}
```

Caching for Rock Websites

Caching in Rock operates on the principle that once a piece of content has been created it doesn't need to be created again. So, a copy can be kept around in a cache. Keeping content in a cache means it can be served very quickly, without triggering slow database queries or web requests. With caching you can provide individuals with faster page loads and a better experience when your server is under heavy load.

Caching is a powerful tool to make your Rock site faster. However, caching can be dangerous without understanding how your cache is being handled. All Rock caching takes the output of a template; anything programmatic inside is uncacheable. Think of Rock caches as a copy of how your Lava presents itself when you access it. Tags like `{%- stylesheet -%}`, `{%- javascript -%}` or page redirects will be applied.

When using Rock caching, developers should be aware of performance on the first load, before Rock has cached content. If your content is very slow, caching isn't a solution because content in your cache doesn't stay there permanently. For content that causes long load times, use Rock's Persisted Dataset feature.

What can be cached?

Rock has several different types of caching available in different blocks. Caching can also be done through Lava or by using the Persisted Dataset feature. Below, we'll break down what can be cached and how.

HTML Content Blocks

The HTML Content Block is one of the most ubiquitous blocks in Rock, and is commonly used for displaying semi-static content on a page. When content is not being customized for individual users, developers should use the block cache `Block Properties > Cache Duration`. Even blocks without Lava content can experience increased performance by avoiding querying the database.

Content Channel View, Content Channel Item View and Content Component Blocks

"Content" blocks display a list of results from a content channel. The block features two different types of cache, accessed through Block Properties, called *Output Cache* and *Item Cache*. The two caches are fundamentally different, and mutually exclusive.

The ***Item Cache*** stores the underlying entity data requested by the block without storing the output of the block. Rendering from this cache is slower because the Lava output is processed when the block is requested.

The ***Output Cache*** stores the output of the entire block. Use the *Output Cache* when the output from the block is not being customized based on the current authenticated person, the current page or any other merge field value. Requests from an *Output Cache* will be faster than an *Item Cache* because no Lava is processed.

Lava Cache Command

The Lava cache command is one of the most flexible ways to cache in Rock because it can be used anywhere that is Lava-enabled. It can also be used in conjunction with all other cache types. At the most basic level, a Lava cache tag has a `key` and `duration`:

```
{% cache key:'decker-page-list' duration:'3600' %}
    {% person where:'LastName == "Decker"' %}
        {% for person in personItems %}
                {{ person.FullName }}

        {% endfor %}
    {% endperson %}
{% endcache %}
```

In the example pictured above, Lava will query the database for all "Deckers" and store the results in Rock's cache with the key of `'decker-page-list'` for a duration of an hour. After an hour has expired, a fresh query will be made from the database.

Keep in mind that Rock doesn't know where your Lava is running. All it knows is the key you gave it. This can work for you or against you. If you want your cached Lava to be unique, be sure to give it a unique key (e.g. 'page-12-deckerlist'). If you'd like your cached Lava to be reused in several places, such as on a number of different pages, use a shared key (e.g. 'decker-list'). Your key strategy is completely up to you.

Using `twopass` you have the option to cache the contents and personalize the output for an individual person. Setting `twopass:'true'` tells Lava to:

1. Run the Lava, then cache the results.
2. When pulling it from the cache, run the cached version through Lava again.

To set tags to be customized for the current individual with the `twopass` parameter, wrap your personalized tags with the `{% raw %}` tag.

```
{% cache key:'decker-page-list' duration:'3600' twopass:'true' %}
    Hi {% raw %} {{ CurrentPerson.NickName }}! {% endraw %}


    {% person where:'LastName == "Decker"' %}
        {% for person in personItems %}


        {% endfor %}
    {% endperson %}
{% endcache %}
```

Note that the current person will be correct (because it survives the first pass because it's in a `raw` command) and the results of the database call will be fully cached.

A Different Kind of Cache - Persisted Datasets

Traditional caching in Rock is limited to specific blocks, or to a particular format when using the Lava cache tag. Persisted Datasets are an always-ready cache that allow you to shape data for speed and use across many different blocks, and with different types of markup. Persisted Datasets are cached on the database or in memory using a job, so they're quick every time.

Persisted Datasets should be used when a large dataset is resource intensive to process, leaving people waiting seconds, or even minutes, for results. They can also be used when certain queries, like getting an attribute of another attribute, would cause issues at scale.

Persisted Dataset Example

```
{% assign data = 'mydataset' | PersistedDataset %}
{%- for item in data -%}
  {{ item.Title }}
{%- endfor -%}
```

If you want more details, we have a whole chapter on Persisted Datasets.

Caching & Rock Performance

When working with Rock pay attention to your page load time, located in the lower left-hand corner of the admin bar. Ideally the load time should be under 0.2 seconds. Keep in mind that "Page Load Time" is not an accurate measure of how long it takes to load in a browser, but it is an excellent measure of server processing time. For browser performance metrics, we suggest using the Network tab in Developer Tools or performance audits like Google Lighthouse.

To understand server side performance for Rock pages, add `?ShowDebugTimings=true` to your querystring. The page will append performance statistics for each individual block to allow for performance tuning.

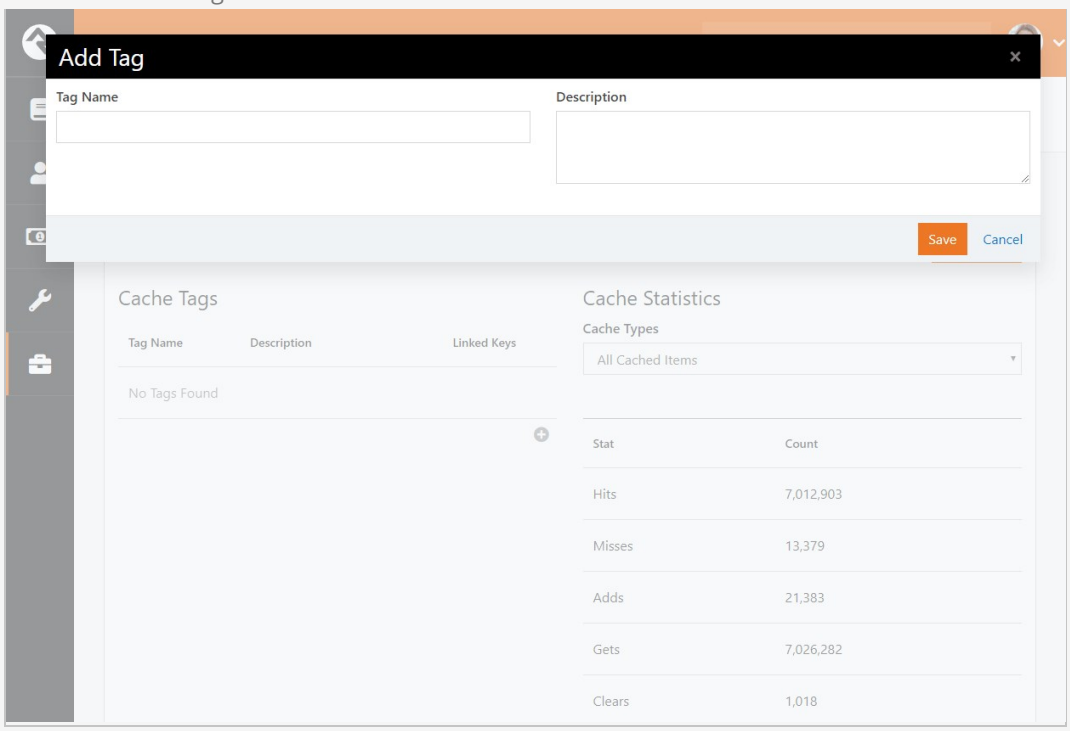
Cache Tags

When updating content, you'll sometimes want your Rock site to instantly reflect the changes you've made. To meet this need, Rock provides multiple ways to clear a cache. You can clear the cache of all objects using the global "Clear Cache" button, or you can clear a group of cached objects using cache tags. By using cache tags, you can precisely control what objects are removed from cache; without the performance penalty of completely clearing cache.

Adding Cache Tags

To add a cache tag go to `Admin Tools > CMS Configuration > Cache Manager`. On the left column you can see any currently added cache tags. To add new tags, click the ⊕ button at the bottom of the grid.

Add New Cache Tag



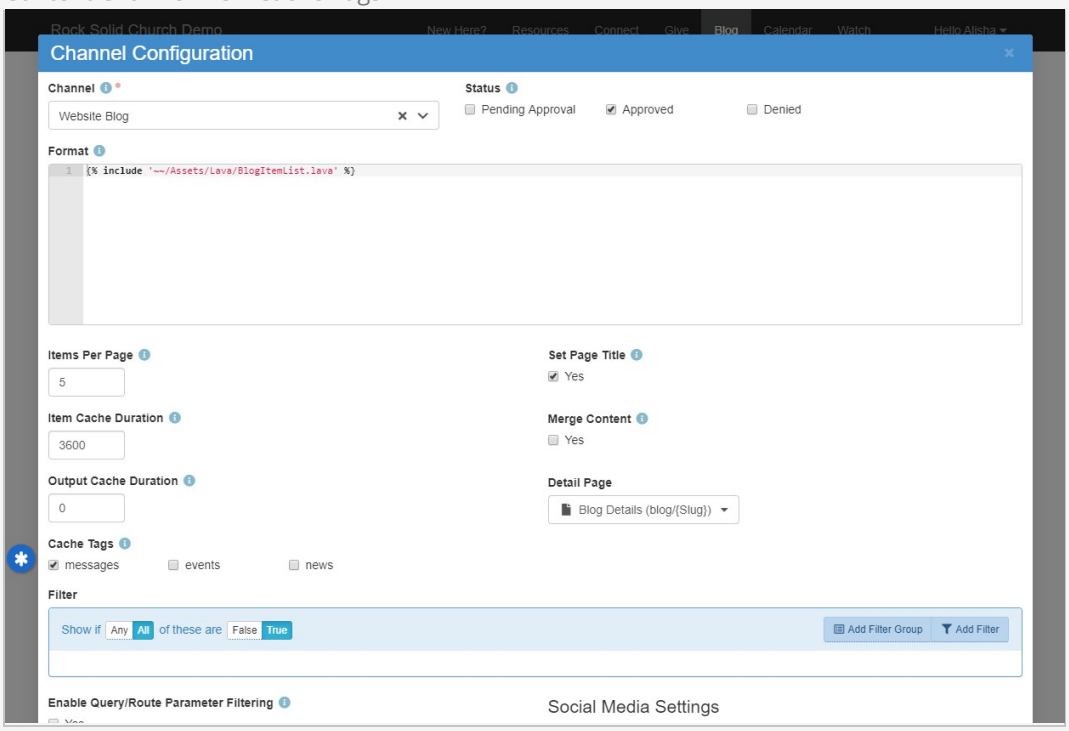
When adding a cache tag, the tag name should be as short and descriptive as possible. We highly recommend using the Description field to describe the purpose of the cache tag in detail. You'll want to be careful, as cache tags cannot be removed or modified. Also, keep in mind that tag names must be all lowercase without any spaces.

Using Cache Tags

After adding cache tags, blocks with caching enabled will have an additional attribute of “Cache Tags” populated with the tags you've added.

Open the block settings of a page in your external Rock site and click the `✎` button. The cache tags created in the *Cache Manager* are displayed. Select the tag(s) you want to assign and click the `Save` button.

Content Channel View Cache Tags



Cache Tags
In the Content Channel example pictured above, the Cache Tags have been set to “messages”.

Now we have the ability to clear the single tag (see Clearing Cache Tags) and update all blocks using the “messages” tag.

Optionally, you could set a block to use multiple cache tags. This way, when any of the tags are cleared, the cache for the block would be updated.

Clearing Cache Tags

To clear all items that are tied to a specific tag, go to `Admin Tools > CMS Configuration > Cache Manager`. Click the `⌫` button to the right of the tag's row. This will empty the cache of all linked keys.

Clear Cache Tags