
Roadiz Documentation

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Roadiz is a polymorphic CMS based on a node system that can handle many types of services. It is based on *Symfony* components, *Doctrine ORM*, *Twig* and *Pimple* for maximum performances and security.

Roadiz node system allows you to create your data schema and to organize your content as you want. We designed it to break technical constraints when you create tailor-made websites architectures and layouts.

Imagine you need to display your graphic design portfolio and... sell some t-shirts. With Roadiz you will be able to create your content forms from scratch and choose the right fields you need. Images and texts for your projects. Images, texts, prices and even geolocation for your products. That's why it's called *polymorphic*.

CHAPTER 1

Philosophy

When discovering Roadiz back-office interface, you will notice that there aren't any Rich text editor also called *WYSIWYG* editors. We chose to promote *Markdown* syntax in order to focus on content hierarchy and quality instead of content style. Our guideline is to preserve and respect the webdesigners' and graphic designers' work.

You'll see that we built Roadiz as webdesigners and for webdesigners. It will allow you to create really quickly website prototypes using *Twig* templates. But as the same time you will be able to get the power of the *Symfony* and *Doctrine* core components to build complex applications.

We also decided to be really strict about Plugins and other addons modules. How many of you do not upgrade your Wordpress website because of plugin dependencies? We decided not to build Roadiz around a "Plugin" system but a **Theme system**, as every Roadiz extensions will have to serve a theme's features. Themes will enable you to create awesome website layouts but also great back-office additions for your customers. You will be able to centralize all your custom code in one place, so you can use a versioning tool such as Git.

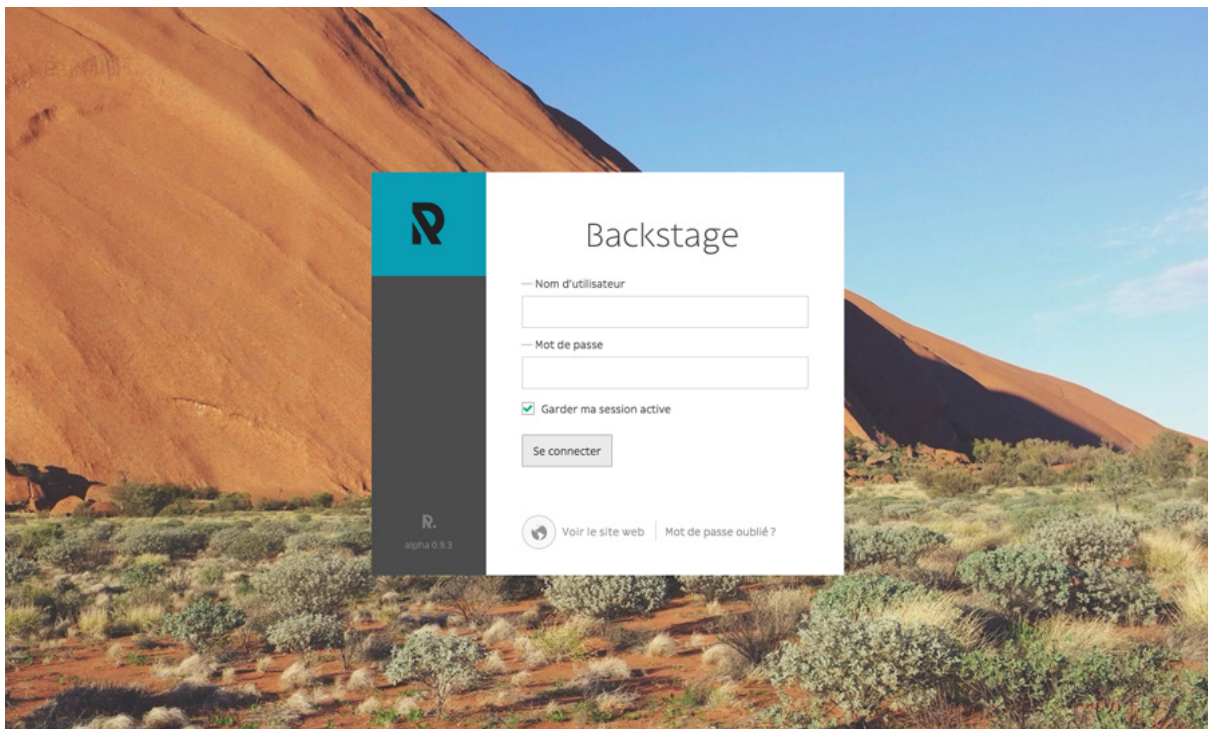
Roadiz theme system will allow you to daisy-chain themes and dispatch features on multiple code. As our CMS is built on Pimple dependency injection container, Roadiz can merge every available themes on the same website. For example, you will be able to create one portfolio theme using Node-system Urls and unlimited static themes which will use a static routing scheme, for a Forum or a Blog or even both! Theme system will even allow you to create additional Doctrine entities and extend our back-office. Yes, just sit on your theme code and you can extend Roadiz to create a manager for your Forum. Cherry on the cake, you can assign each theme to a specific domain name to create mobile or media specific layouts. Believe me, this cake is not a lie.

We want Roadiz to be a great tool for designers and developers to build strong web experiences together. But we thought of editors too! Roadiz back-office theme "Roziert" has been designed to offer every back-users a great writing and administrating experience.

2.1 User documentation

Note: User documentation is on the way. We invite you to send us questions on our [Gitter account](#) or to leave some documentation suggestions on our [Github repository](#).

First of all, you will need to connect to Roadiz' backoffice in order to make changes to your website contents. To connect, you just have to write `/rz-admin` after your website domain name, in your browser address bar. Then you will be able to enter your username and password that you chose during Roadiz installation or that you received by email.



Here you can choose to keep your connection active for a couple of days, if your browser accepts cookies.

If you forgot your credentials, the *Forgot password?* section will ask you an email to send you a password reset link.

Table of contents

2.1.1 Write in Markdown

Markdown is a lightweight markup language with plain text formatting syntax designed so that it can be converted to HTML and many other formats using a tool by the same name. [...] The key design goal is readability – that the language be readable as-is, without looking like it has been marked up with tags or formatting instructions, unlike text formatted with a markup language, such as Rich Text Format (RTF) or HTML, which have obvious tags and formatting instructions.

—Wikipedia article — <https://en.wikipedia.org/wiki/Markdown>

Titles

Add two hashtag # or more according to your title importance level. Backoffice shortcut buttons allow to directly insert your titles marks before your selected text. Make sure to leave a blank line before each new title you write.

```
## Architecture
### Modern architecture
```

Be careful not to use only one hashtag to create a first-level title as this is usually used for pages main title.

Alternate syntax

Main title and second level titles can be written using = and – as underline characters.

```
Architecture
=====

Modern architecture
-----
```

Bold

Insert two stars * before and after your text to set in bold. Backoffice shortcut button allows to insert directly the 4 characters around your selected text.

```
This is a bold text. And a normal one.
```

Be careful not to leave whitespaces inside your stars group (in the same way you do with parenthesis) otherwise your text won't be styled.

Italic

Insert one star * before and after your text to set in italic. Backoffice shortcut button allows to insert directly the 2 characters around your selected text.

```
This is an italic text. And a normal one.
```

Bold and italic marks can of course be combined using 3 stars before and after your selected text.

What if * character is already in use

Bold and italic markup can be performed using `_` (underscore) character too if you actually need to write a *star* character in your text.

```
A _3* Bed & Breakfast has just opened its doors in middletown.
```

Strike-through

Insert two tildes `~` before and after your text to strike-through.

```
This is ~~striked-through text~~.
```

Ordered and unordered lists

Insert a star `*` or a dash `-` followed by a single whitespace for each of your list item. One item per line. Leave a blank line before and after your list. For *ordered* list, use a digit followed by a dot and a whitespace instead.

```
* A line
- An other line
* A unknown line

1. The first item
2. The second item
3. The third item
```

If you need to break an item into several lines, you'll need to use the line-break markup.

Nested list

You can insert a second/third/... level for your list, just by leaving four spaces before your new list-item mark.

```
- A list item
  - A sub-item
  - A second sub-item
    1. An ordered sub-sub-item
    2. The second sub-sub-item
```

New paragraph and line-break

A simple line-break is always ignored by Markdown language because it makes a difference between a **paragraph** and a **line-break**. To simply create a line-break without creating a new paragraph, **leave at least 3 spaces at the end of your text line then go to a new line.**

```
Address:<space><space><space>
26 rue Burdeau<space><space><space>
69001 Lyon<space><space><space>
France
```

To create a new paragraph, **always leave a blank line between your text blocks.** Any additional blank line will be ignored.

```
Nullam quis risus eget urna mollis ornare vel eu leo.
Cras justo odio, dapibus ac facilisis in, egestas eget quam.
```

```
Aenean eu leo quam. Pellentesque ornare sem lacinia  
quam venenatis vestibulum.
```

According to your website design (CSS), new paragraphs may have no visual margins between them. Inserting more than one blank line won't add any additional visual space as Markdown ignores it.

Hypertext links

Write link label between braces immediately followed by the URL between parenthesis. For external links do not forget protocol prefix `http://` or `https://`.

```
[My link] (http://www.google.com)
```

To create a internal link, just use relative notation:

```
[Contact us] (/page/contact-us)
```

Then, for an email link, use `mailto:` prefix:

```
[John Doe] (mailto:jd@example.com)
```

A link title can be added by inserting it before *ending parenthesis* wrapped in quotes.

```
[My link] (http://www.google.com "Link to Google website")
```

Block quotes

Insert a `>` sign before each new paragraph and a space to wrap your text in a quote block. You can then use all other Markdown symbols inside your quote.

```
> ### Donec ullamcorper nulla non metus auctor fringilla.  
> Aenean lacinia ***bibendum*** nulla sed consectetur.  
> Vestibulum id ligula porta felis euismod semper.
```

Images

Images use the link syntax with an exclamation mark prefix `!`. For external images do not forget to write full URL with protocol `http://` or `https://`.

```
![A cat] (/files/cat.jpg)
```

```
![A cat from an other website] (https://www.example.com/images/cat.jpg)
```

Be careful, images will be displayed as is, unless your webdesigner planned to adapt image size coming from Markdown fields using CSS. As links, an external image may break if its owner deletes the original image. Make sure to host critical images directly on your website and to use *relative URL*.

Footnotes

Footnotes are not supported with *basic* Markdown syntax, but the *Markdown Extra* one. So before using them, **make sure your webdesigner used the right Markdown parser in your theme.**

```
Praesent commodo cursus magna[^note], Sed posuere consectetur est at  
lobortis. Vel scelerisque nisl consectetur et[^othernote].
```

```
[^note]: This a footnote
```

```
[^othernote]: This a second footnote
```

Markdown will *automatically generate anchor links between your footnote and its reference*. It will automatically **use numbers as footnote reference labels**, so you don't have to bother to write numbers yourself but easy-to-remember markers labels.

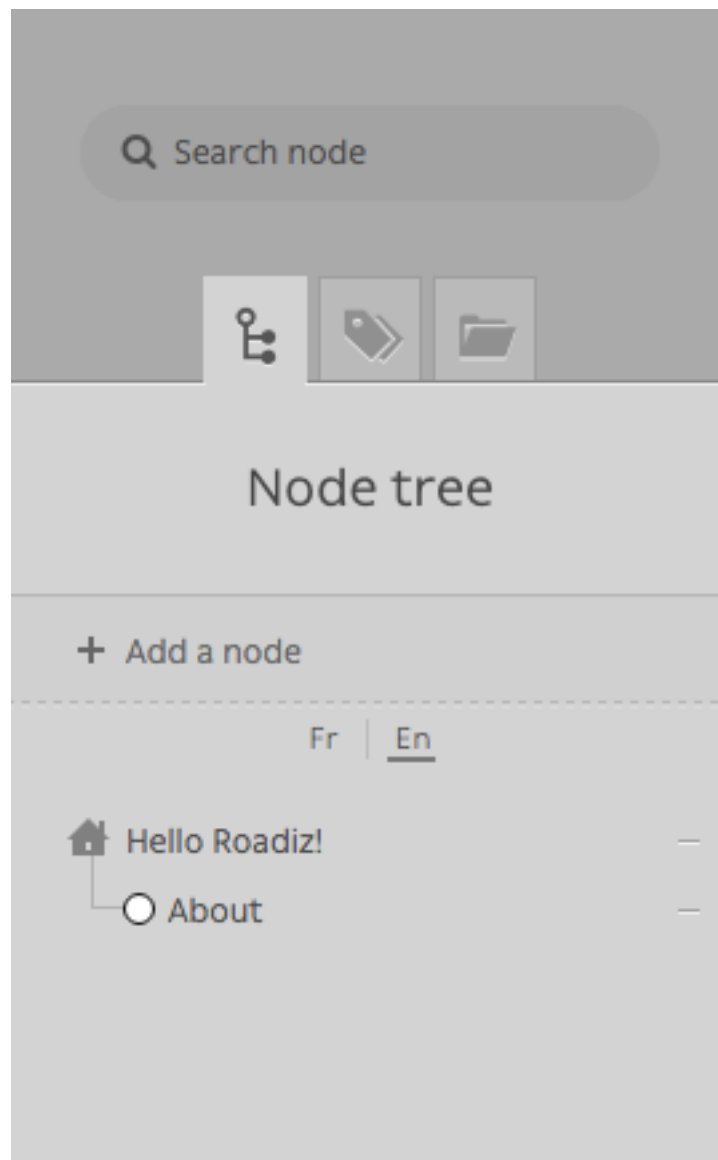
2.1.2 Managing nodes

Nodes are the most important part of Roadiz CMS. They are your content which can be shaped as you want according to your node-types definitions. A node can be a blog-post, a content page, a photo gallery, even a shop product. This is why we called it "Node", it's an abstract data container interconnected with other node in a tree.

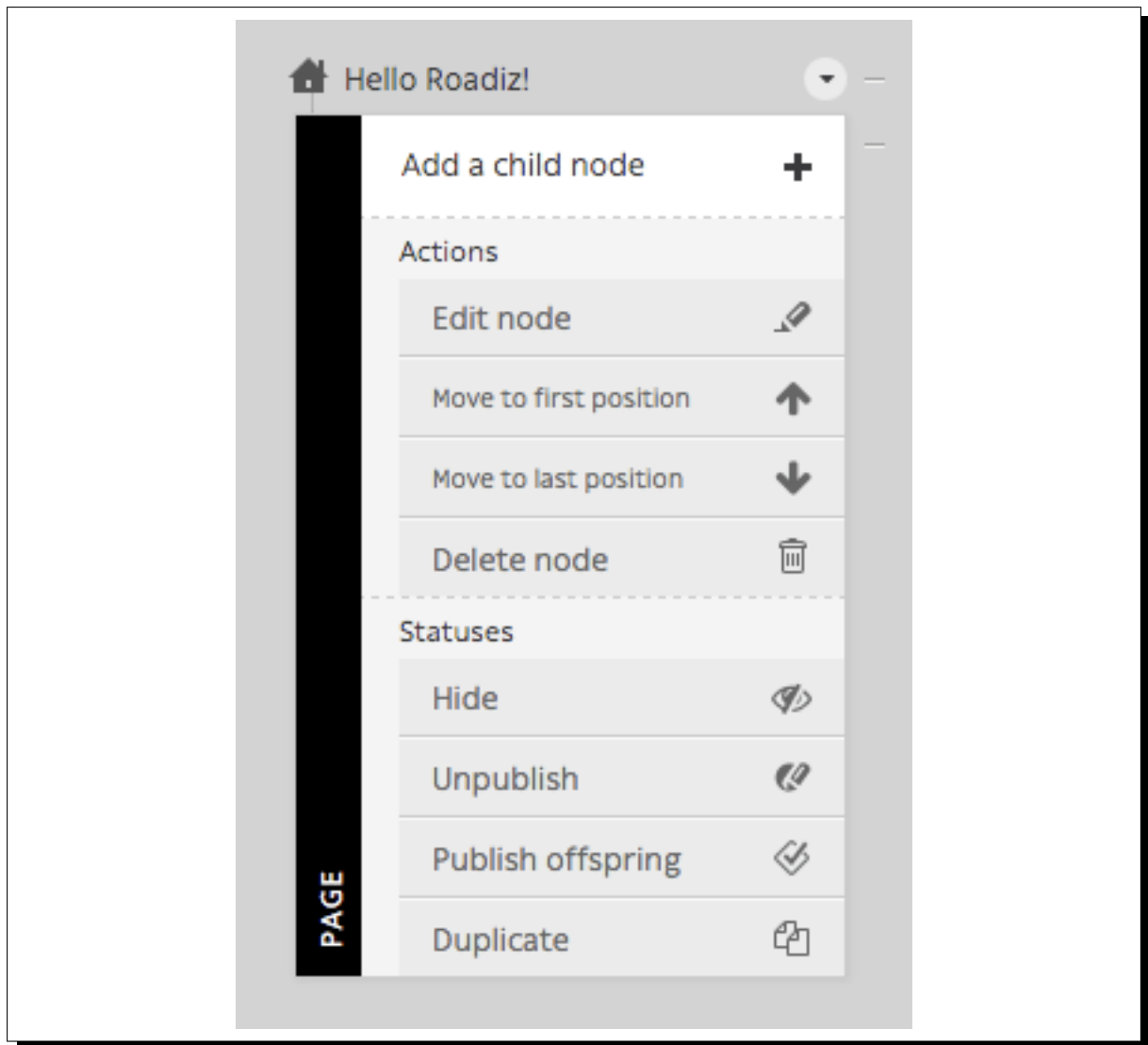
Node-tree navigation

Node tree

Simple node-tree after installing Roadiz with *Default theme*.



Contextual menu for *home* node.



Each node has a place in your website, that's why we chose to arrange your content in a tree-shaped way. It's intuitive and it works the same as your computer files.

- To edit a node' content, simply click on it.
- To move a node across your tree, drag & drop using its handle (round or rombus shape). You can drop a node after or before an other one. You can also drop inside just by moving your mouse a bit on the right, you should see the node shadow to shift right.
- Other actions are available from each node' contextual menu. Right click on the node or click on the arrow at the right when you pass your mouse over.

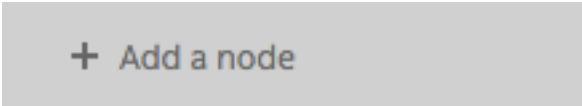
Contextual menu actions

- *Add child node*: to create a content inside the current node.
- *Edit node*: links to the current node "edit content" page.
- *Move to first position*: to move a node at the first position inside its parent node.
- *Move to last position*: basically the same for the last position.
- *Delete node*: to move current node to the trashcan. A confirmation page will be prompt before really deleting a node.

- *Hide/Show*: Change a node' visibility. A hidden node won't be displayed in Urls and your website, even if you are an administrator.
- *Publish/Unpublish*: Change a node' publication status. Unpublished nodes are not visible to anonymous visitors, but visible for back-office users using `?_preview=1` query parameter.
- *Publish offspring*: Publish a node and all its children nodes recursively.
- *Duplicate*: Copy all current node' content and relationships into a new node.

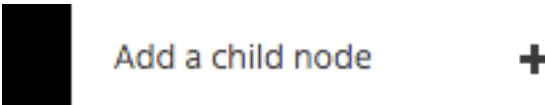
Creating a node

Add buttons



+ Add a node

“Add node” button located at the top of your *node-tree*.



Add a child node +

“Add a *child* node” button, which is located at the top of each node' contextual menu.

To add a blank node to your node-tree, you will need to choose your location. In Roadiz you can add a content at the root of your tree or choose a “parent-node”. In both cases you will be asked to choose a *node-type* and a *node-name* before creating your node.

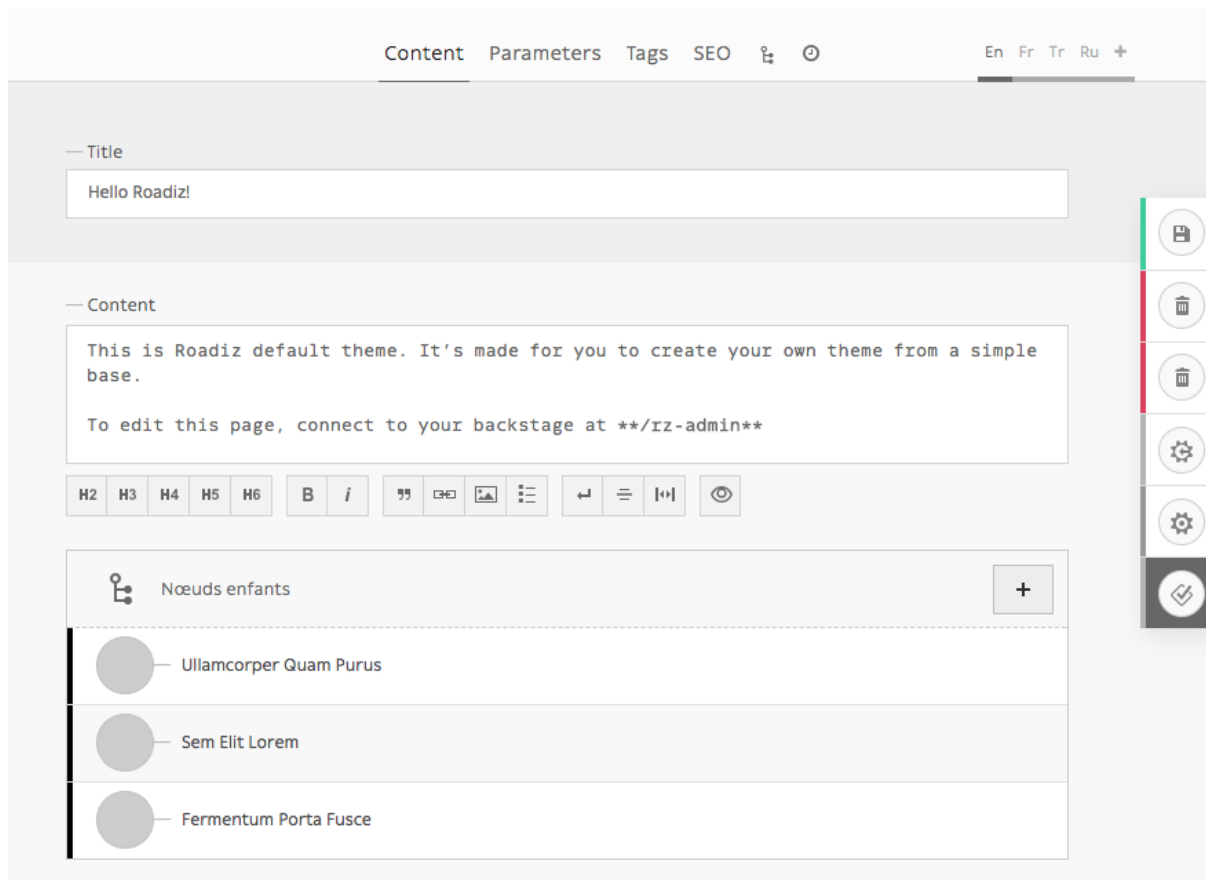
- *Node name* is the global identifier for your node. It must be unique and won't change from one translation to an other. It can be changed later except if your developer locked it up. *Node name* is usually used to build your pages URL.
- *Node-type* defines what fields will be available in your content. Choose well as you won't be able to change it later, you 'll have to delete and recreate an other node.

Edit an existing node

Node edition page is composed in several tabs.

- *Node content*
- *Node parameters*
- *Tags*
- *SEO*
- *Tree*, if your node is set up as a *stack*

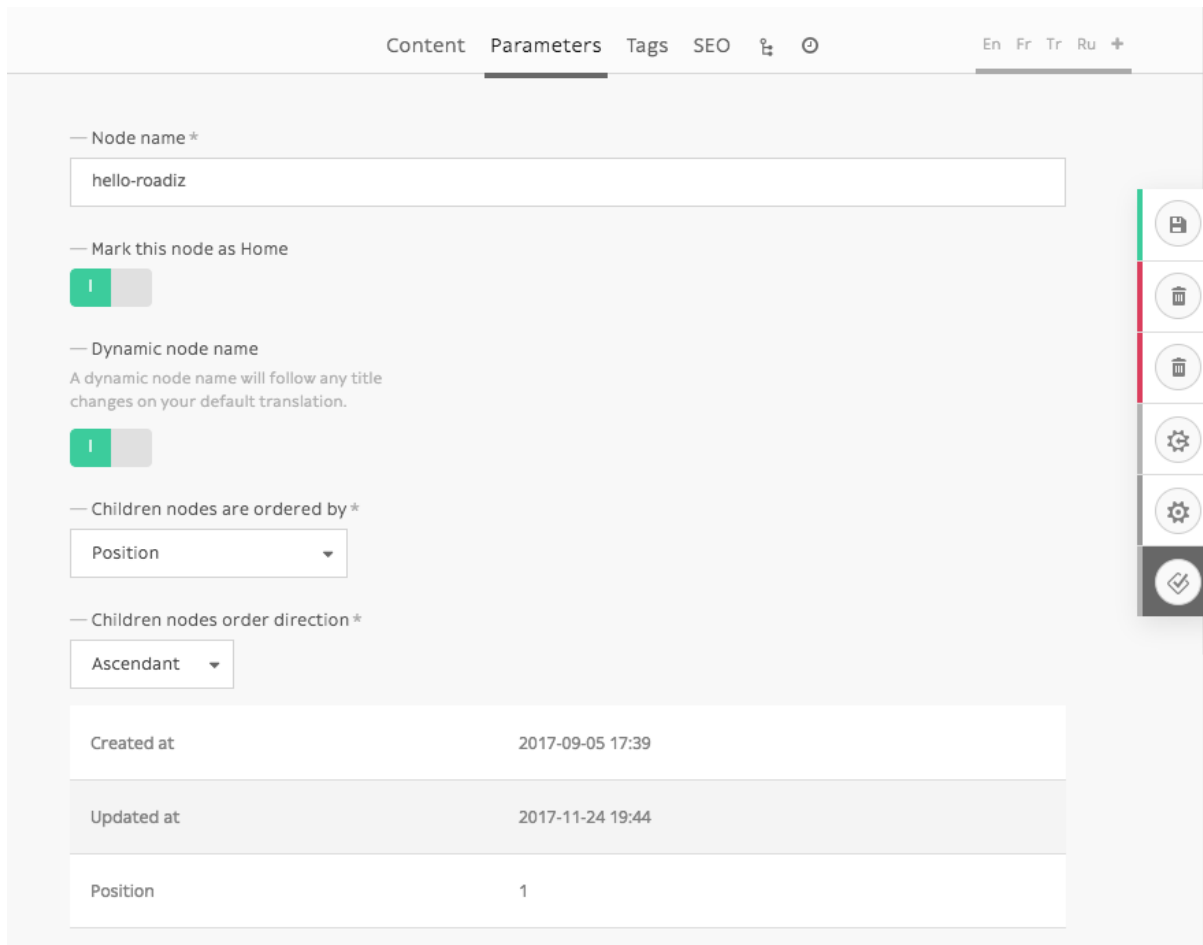
Node content





Contents tab is basically the main part where you will edit your node specific data, using node-type fields such as *text* fields, or *documents* fields, etc.

This tab will display different content over translations depending on which fields are marked as *universal* or not.

Node parameters



Content Parameters Tags SEO   En Fr Tr Ru +

— Node name *

hello-roadiz

— Mark this node as Home

☒

— Dynamic node name

A dynamic node name will follow any title changes on your default translation.

☒

— Children nodes are ordered by *

Position

— Children nodes order direction *

Ascendant

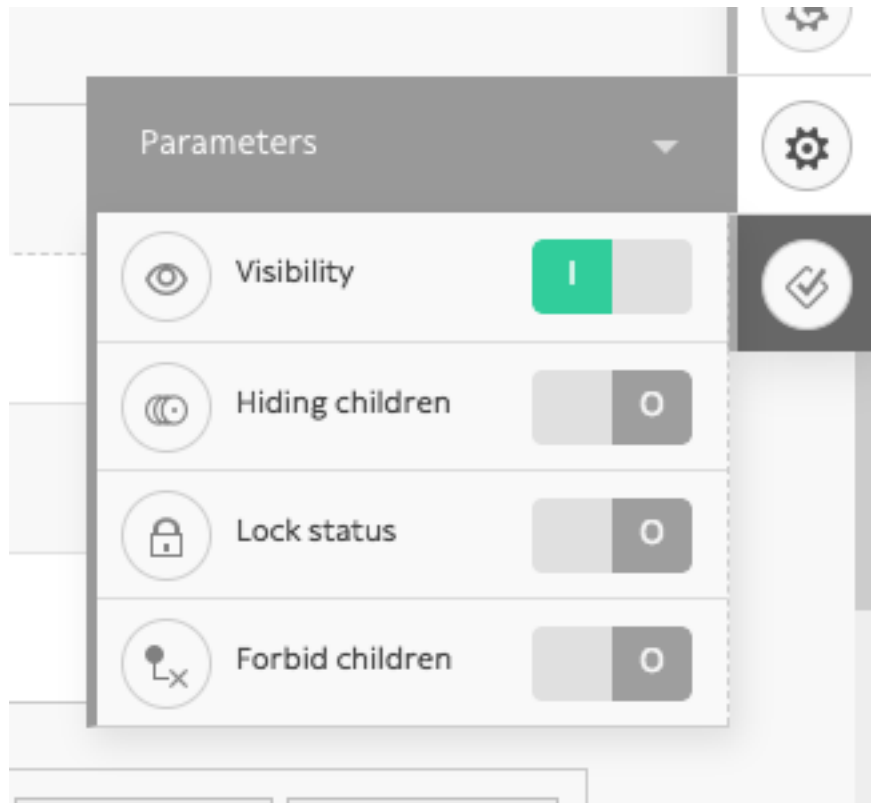
Created at	2017-09-05 17:39
Updated at	2017-11-24 19:44
Position	1

Parameters are global data such as your *node name*. They are used for managing your node visibility according to each user role and node back-office' settings. This section should not be used so often as parameters will be set once by your developer.

This tab will display the same content over translations.

Side actions and parameters

Additional parameters are available on the right action-menu. These parameters are node-wide, they will apply on each node translations.



- **Visibility:** Hide or show current node (according to your theme)
- **Hide children:** Switch current node to a **stack**, children nodes won't appear in the global Node-Tree anymore. You will be able to add *Stack type* buttons in the [node parameters tab](#).
- **Lock status:** Prevent users to delete current node or rename it. You should switch it on if your rely on some nodes in your themes.
- **Forbid children:** Prevent users to create children nodes.

Tags

The screenshot shows the 'Tags' management interface in Roadiz. At the top, there is a breadcrumb 'MAIN-MENU → HELLO ROADIZ!' and a large heading 'Hello Roadiz!' with an information icon. Below this is a navigation bar with tabs: 'Content', 'Parameters', 'Tags' (which is selected), 'SEO', and two icons. The main content area is titled 'Tags' and contains the instruction: '— List tags to link with current node *'. Below this, it says: 'You can use existing or new tags. You can directly create tags inside an existing one using "/".'. There is a large empty rectangular box for listing tags. Above this box, there is a header bar with a tag icon, the text 'List tags to link with current node', a note 'Items position do not matter.', and an 'Explorer' button. On the right side of the interface, there is a vertical toolbar with icons for saving, deleting, creating, settings, and a checkmark.

This tab will display the same content over translations.

SEO

Content Parameters Tags **SEO** ⚙️ ⌚

En Fr Tr Ru +

Edit SEO data

— Meta-title

— Meta-keywords

— Meta-description

Url alias

Add an url-alias

— Url alias *

— Translation *

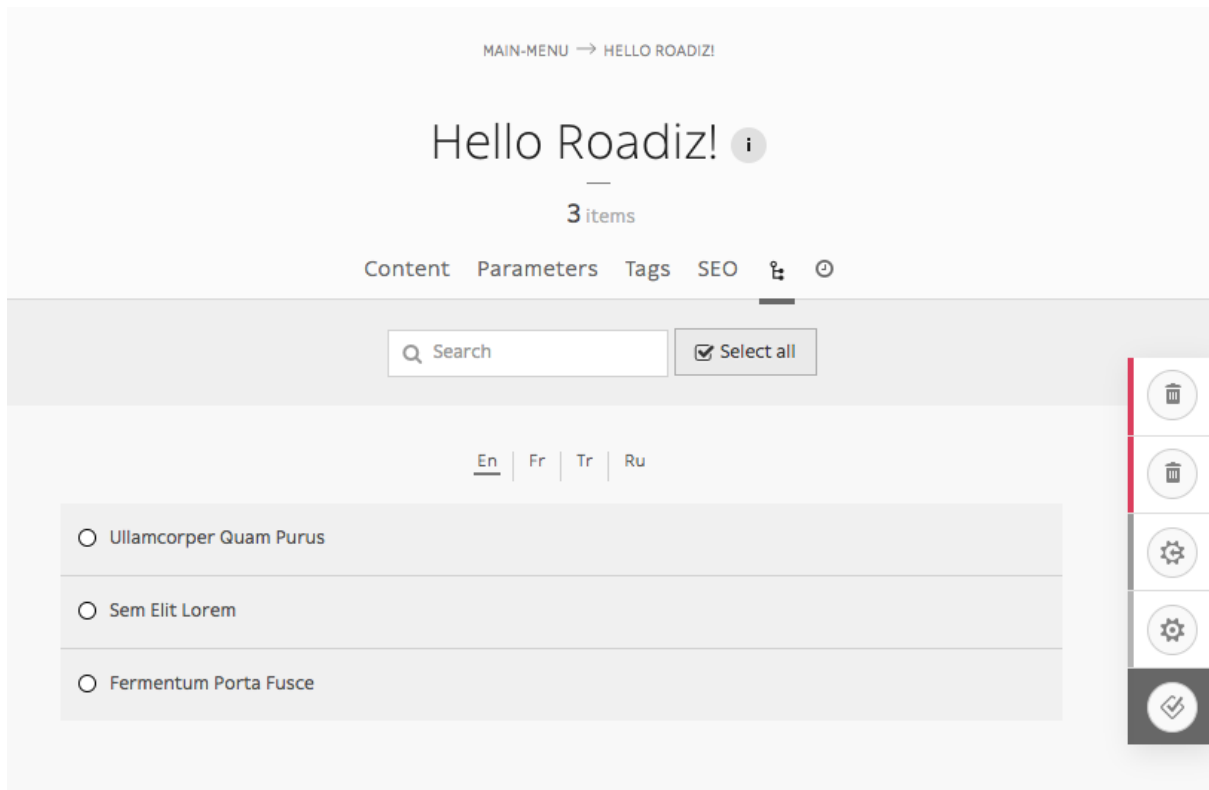
English ▾

+ Add url-alias

This tab will display different content over translations.

Tree

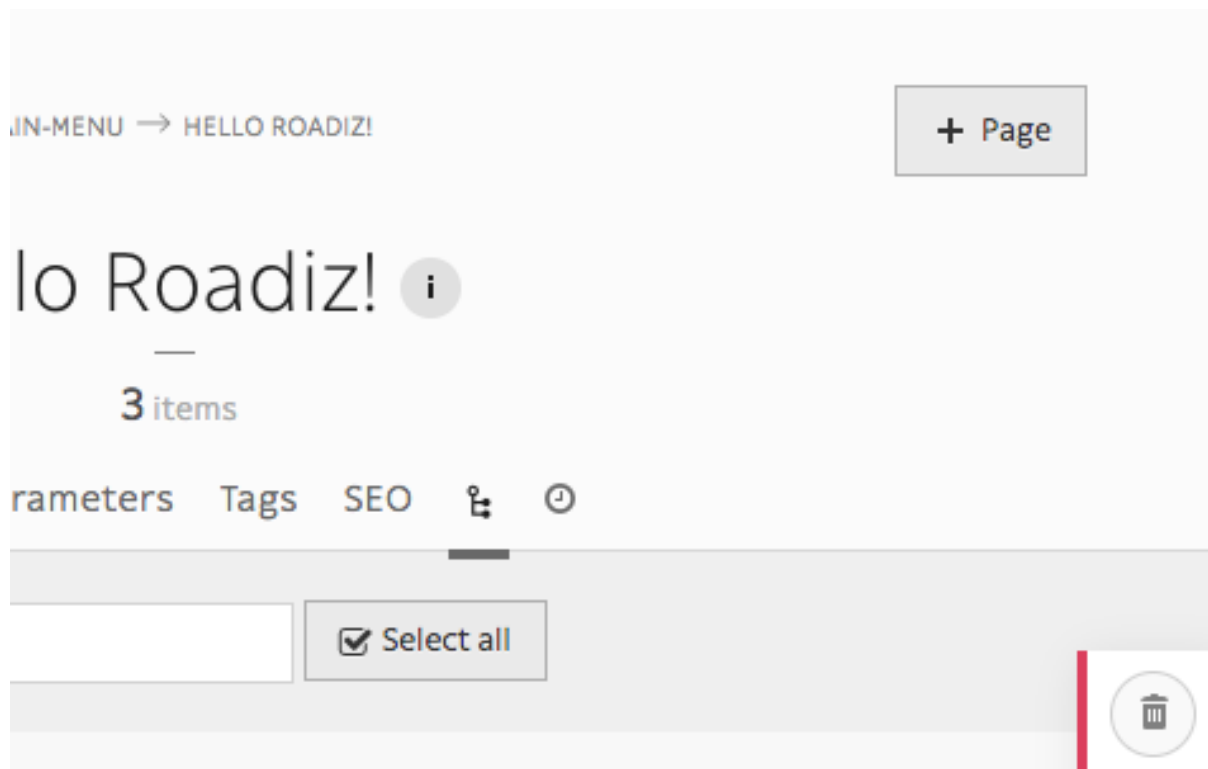
When a node is defined as a *stack*, *Tree* becomes its default view. You can set the default ordering in the *Edit* tab. And node-types set as *publishable* will display their publication date before its name.



Tree view becomes very interesting if you have many many children nodes, when you have blog posts or portfolio projects for example.



Then you can add *stack type* in *Edit tab* to make some handy quick-add buttons to this view.



Nodes publication system

During its lifecycle, every nodes can have a different publication status. When you create a new content, it will be automatically set as **Draft** by Roadiz so that you can edit it without bothering your visitors and sharing unfinished work.

Available statuses:

- **Draft:** First status for new nodes
- **Pending validation:** It's a medium status for user that do not have permission to publish nodes
- **Published:** That's the most important status, it will set the green light to your visitor to view your content
- **Archived:** When you don't want to publish a node but you don't want to delete it either
- **Deleted:** It's the last status for your nodes. Before emptying your node trashcan, every content will wait with this status.

To improve status visibility, *draft* and *pending* nodes have a rhombus shape and *published* nodes have a circle shape.

Preview unpublished nodes

Unpublished nodes are not viewable for anonymous visitors, Roadiz allows backend users to preview them adding a dedicated *query parameter* called `?_preview=1` in your website URLs. Using a different URL than your public website is very important as it could lead to errors or to expose unpublished content if your website is hosted behind a reverse proxy cache like *Varnish*.

For example, if your `my-news` page is not published yet, connecting to `http://mywebsite.com/my-news` will lead to a 404 page for your anonymous visitors, as well as you too. If you want to preview it, you'll have to connect to `http://mywebsite.com/my-news?_preview=1`. This URL will only allow authenticated backend users, other people will be denied.

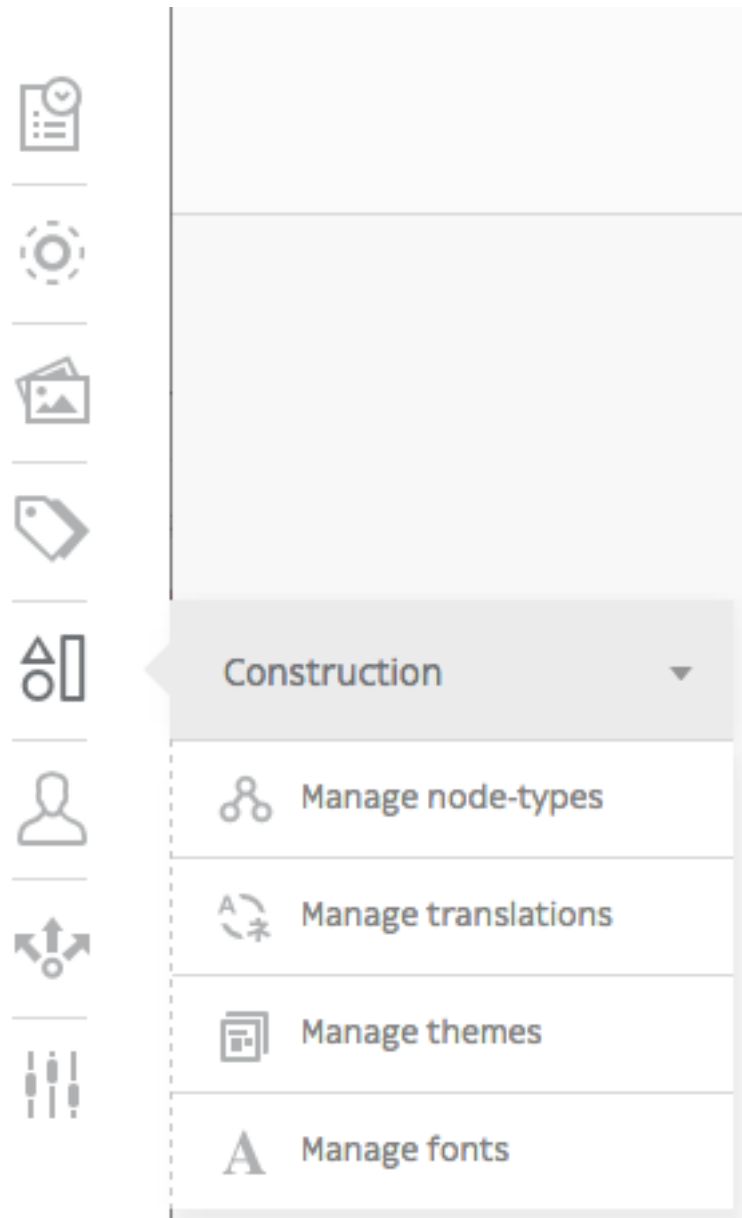
2.1.3 Managing node-types

This is a simple guide on how to create and manage nodes using Roadiz CLI, add and remove node fields, or even how to import nodes.

First and foremost, you need to create a new node-type before creating any kind of node.

If you want to know more about what a node-type is, please visit the other section of the developer documentation.

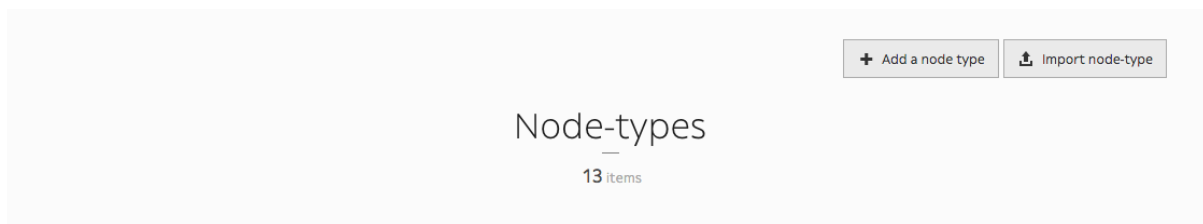
When working with Roadiz in the back-office, you can easily manage node-types via the *Construction* icon in the toolbar.



Add node-type

Once you have landed on the Node-Types page (<https://mywebsite.com/rz-admin/node-types>), you can create node-types by clicking on *Add a node-type*.

Note: You can export and import a node-type if you have a .json file. See *Other action* for more information.

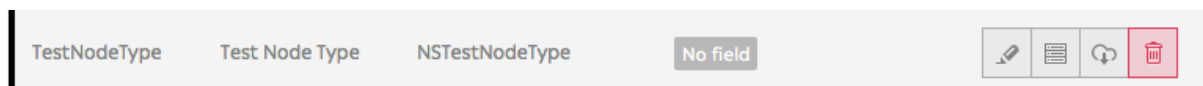


Upon filling the two mandatory settings *Name* (that developpers will use) and *Display Name* (that back-office users will see), you are now ready to create your first node type.

Warning: Be careful when you name your node-type though, *Name* field can't be changed once the node-type is created. See *Delete node-type* section to know how to delete a node-type.

Other options (*Visible*, *Newsletter node-type*, *Node-type hides its nodes* and customizable color) aren't required and can always be altered later on.

You have now created your first node-type! It now appears on the node-type page along other node-types and you can now manage its fields.



Delete node-type

Made a typo when creating a node-type? No longer in need of a node-type ? You can delete it by simply clicking the trashcan icon on the Node Types page (<https://mywebsite.com/rz-admin/node-types>).

Name	Display name	Node-type entity name	Number of fields	Status	Actions
Page	Page	NSPage	3 fields		

Adding node-type field

To add fields to your newly-created node-type, click the *Manage node-type fields* icon.

Name	Display name	Node-type entity name	Number of fields	Status	Actions
Page	Page	NSPage	3 fields		

Then click on 'Add a node-type field' button.

Test Node Type fields

Name	Label	Type	Actions

Fill in the form to create a new field :

- *Name*: what developers will use
- *Label*: what back-office users will see
- *Type*: single choice option that will define the content (basic text, markdown text, documents, email, number, single or multiple choice, children nodes etc.)
- *Description*, *Group name*, *Visible*, *Indexed*, *Default values*, *Min length*, *Max length* (optional)

Note: *Default values* is an interesting field as you can specify what kind of node-types that can be linked to this node-type. You can also use it as a filter in the explorer, and only show those default values.

Add a node-type field

— Name

— Label

— Type

Single-line text

— Description

— Group name

— Visible

I

— Indexed

O

— Default values

Enter each values separated with commas.

— Min length

— Max length

Other actions

From one website to another, you can export node-types as .json files.

Name	Display name	Node-type entity name	Number of fields	Status	Actions
Page	Page	NSPage	3 fields	<div></div>	<div>Export</div> <div><div></div><div></div><div></div><div></div></div>

An .json file should look like this when you open it in any editor:

```
{
  "name": "Page",
  "displayName": "Page",
  "visible": true,
```

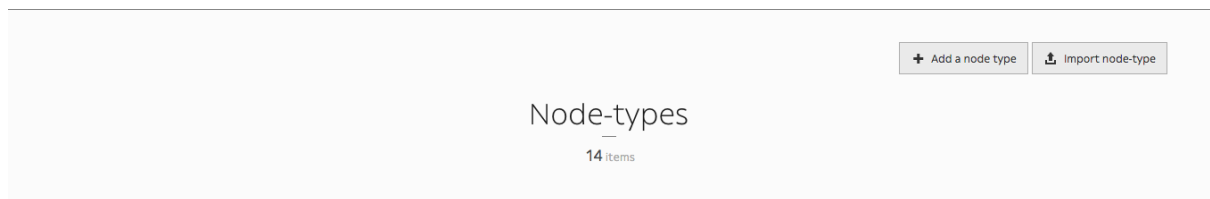
```

"publishable": false,
"reachable": true,
"newsletterType": false,
"hidingNodes": false,
"color": "#000000",
"fields": [
  {
    "position": 1.0,
    "name": "content",
    "label": "Content",
    "type": 4,
    "expanded": false,
    "nodeTypeName": "Page",
    "universal": false,
    "indexed": false,
    "visible": true
  },
  {
    "position": 2.0,
    "name": "children",
    "label": "N\u0153uds enfants",
    "type": 16,
    "expanded": false,
    "nodeTypeName": "Page",
    "universal": false,
    "indexed": false,
    "visible": true
  },
  {
    "position": 3.0,
    "name": "header_image",
    "label": "Header image",
    "type": 9,
    "expanded": false,
    "nodeTypeName": "Page",
    "universal": false,
    "indexed": false,
    "visible": true
  },
  {
    "position": 4.0,
    "name": "pictures",
    "label": "Pictures",
    "type": 9,
    "expanded": false,
    "nodeTypeName": "Page",
    "universal": false,
    "indexed": false,
    "visible": true
  }
],
"defaultTtl": 0
}

```

Notice the four fields that have been added to this *Page* node-type.

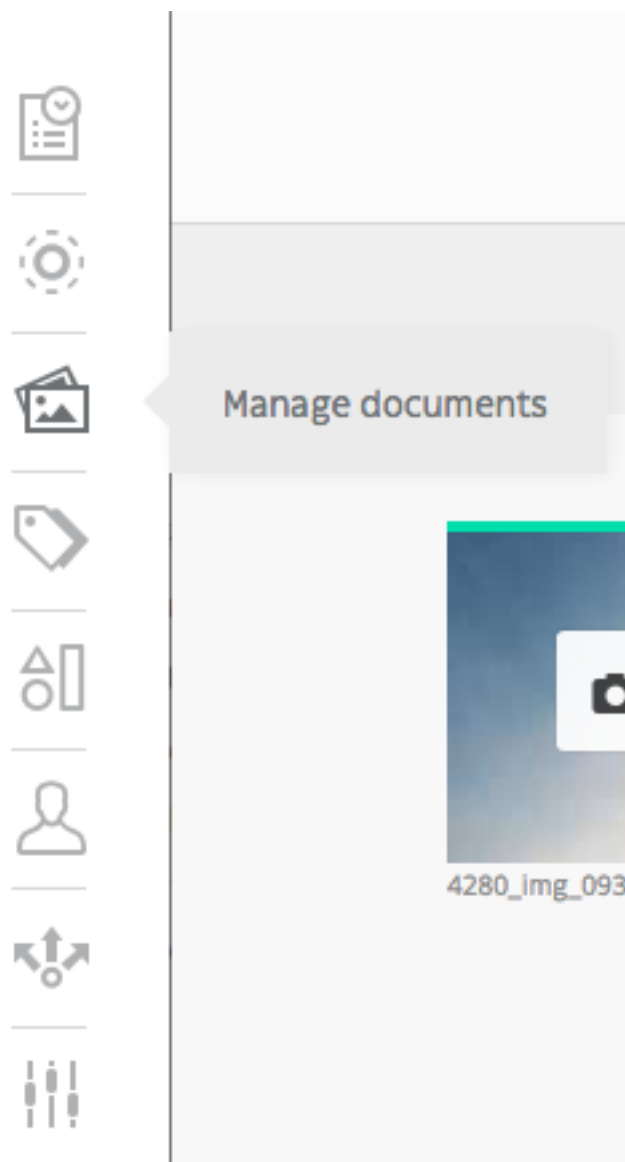
You can write an .json file yourself if you feel like it, but it is probably easier to simply export node-types from existing website, then import it on your new website. It can be easily done by clicking on *Import node-type* button, then selecting it via your explorer.



You are close to fully master Roadiz' back-office powers ! Keep referring to this documention if you have any problem, and let us know if any information goes missing.

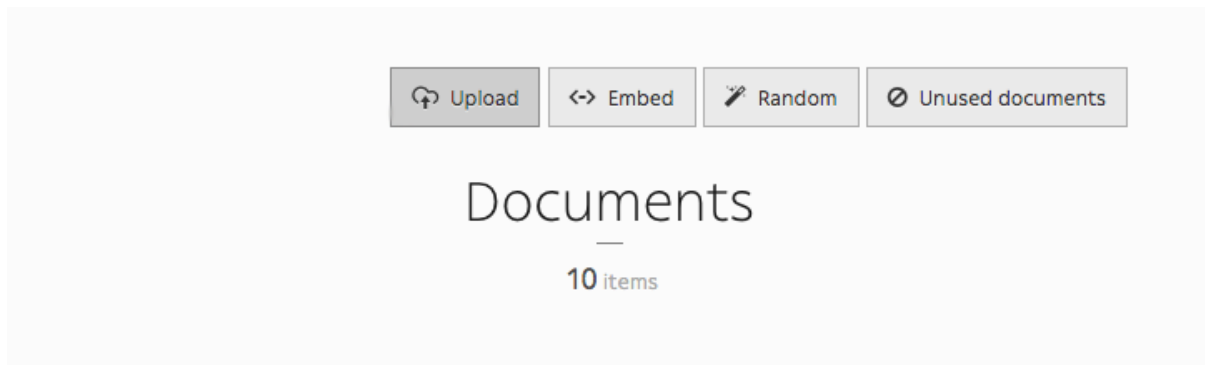
2.1.4 Managing documents

You can manage documents via the *Document* icon in the toolbar. You can either upload, embed, randomly downloaded documents, and even have a look at unused documents in your website.



Upload document

Uploading a document has never been this easy: just drag and drop the document in the designated area.



When you upload files, Roadiz will try to reduce any image larger than 2500 pixels (width or height) in order to ease up further transformations on it. The CMS will always keep a *raw* version of your uploaded document if you decide to increase this limit over 2500 pixels. Keep in mind that Roadiz won't be able to optimize your image to a better format: for example if you uploaded a PNG image containing no transparent area, the CMS won't convert it to JPEG format and you will end up with a heavy file even if you resize it.

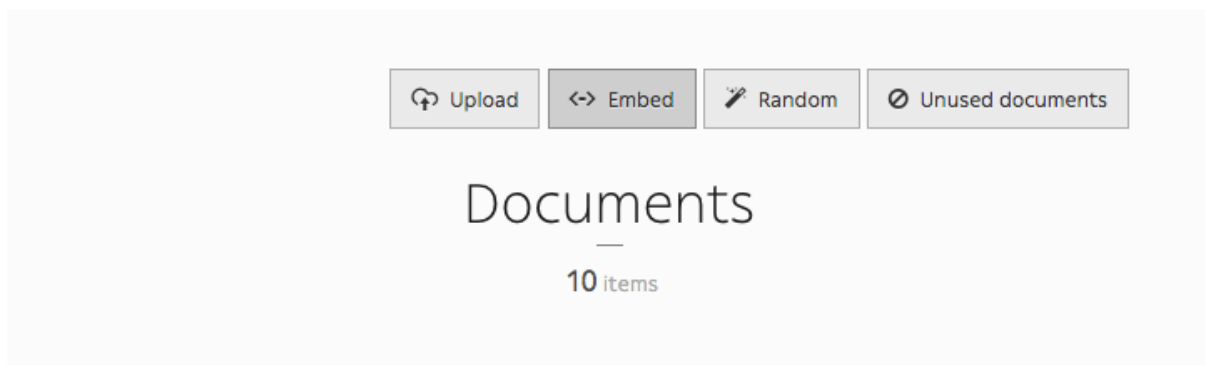
- Photographs, complex images with no transparency: *use JPEG*
- Logos, icons, complex images with transparency: *use PNG*

Using an image optimizer (such as *tinypng*, *kraken.io*, *jgoptim*, ...) **before** uploading onto Roadiz is useless because, the CMS will lose these optimizations when it processes transformations (crop, resizing, contrast and quality).

On the other hand, if your website has been developed with `picture` support, Roadiz will be able to serve any images in the new WEBP format which is 30% lighter than JPEG and supports transparency (alpha channel). So any user browsing your website with a Chrome, Firefox or Edge will see only WEBP images and will save up minimum 30% of bandwidth usage. In the near future, AVIF image format will be more supported by major browsers, and Roadiz will be able to generate optimized image with this format too.

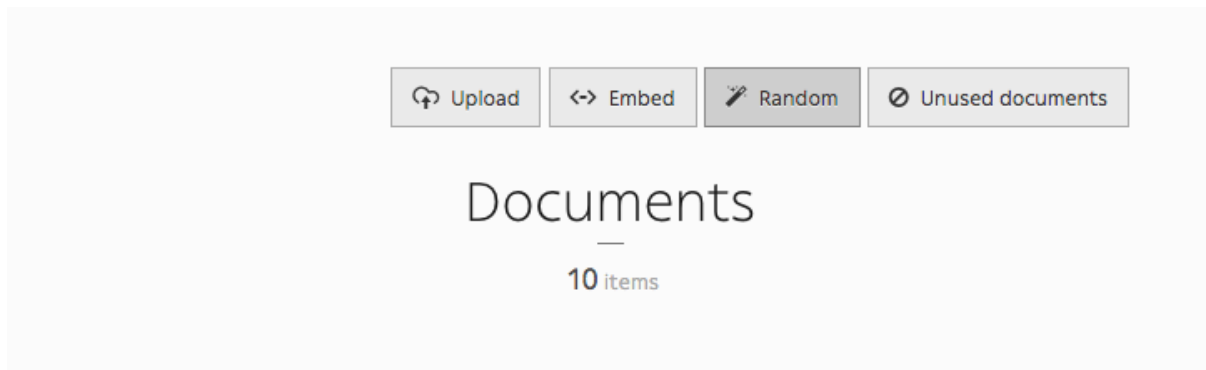
Embed document

Here is the magical part of the Documents section. You can have embedded documents from *YouTube*, *SoundCloud*, *Vimeo*, *Mixcloud*, *Spotify*, *Twitch*, *TED* and *Dailymotion*, then use them as if they were images in your content blocks.



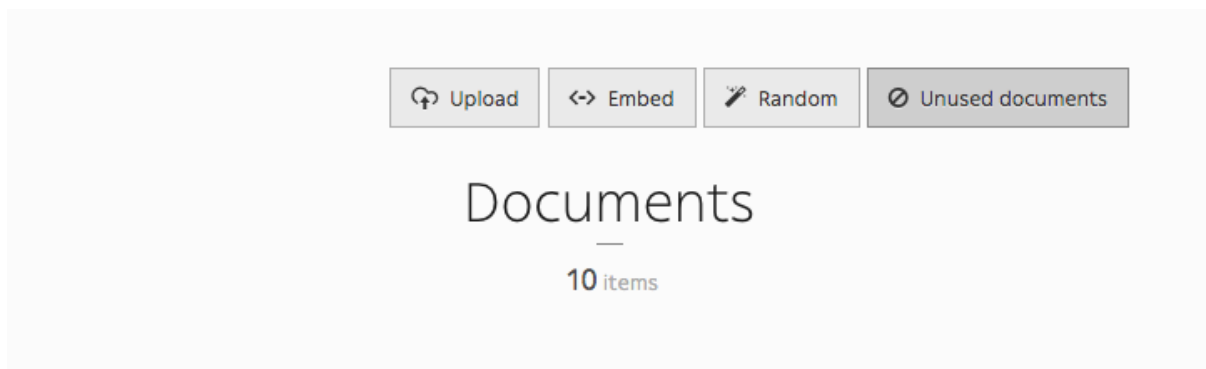
Random document

Random is a cool feature that allows to download random documents to your website from *Splashbase*.



Unused document

Clicking *Unused document* allows you to gather every unused documents on your website, so you can clean your database and get rid of useless documents.

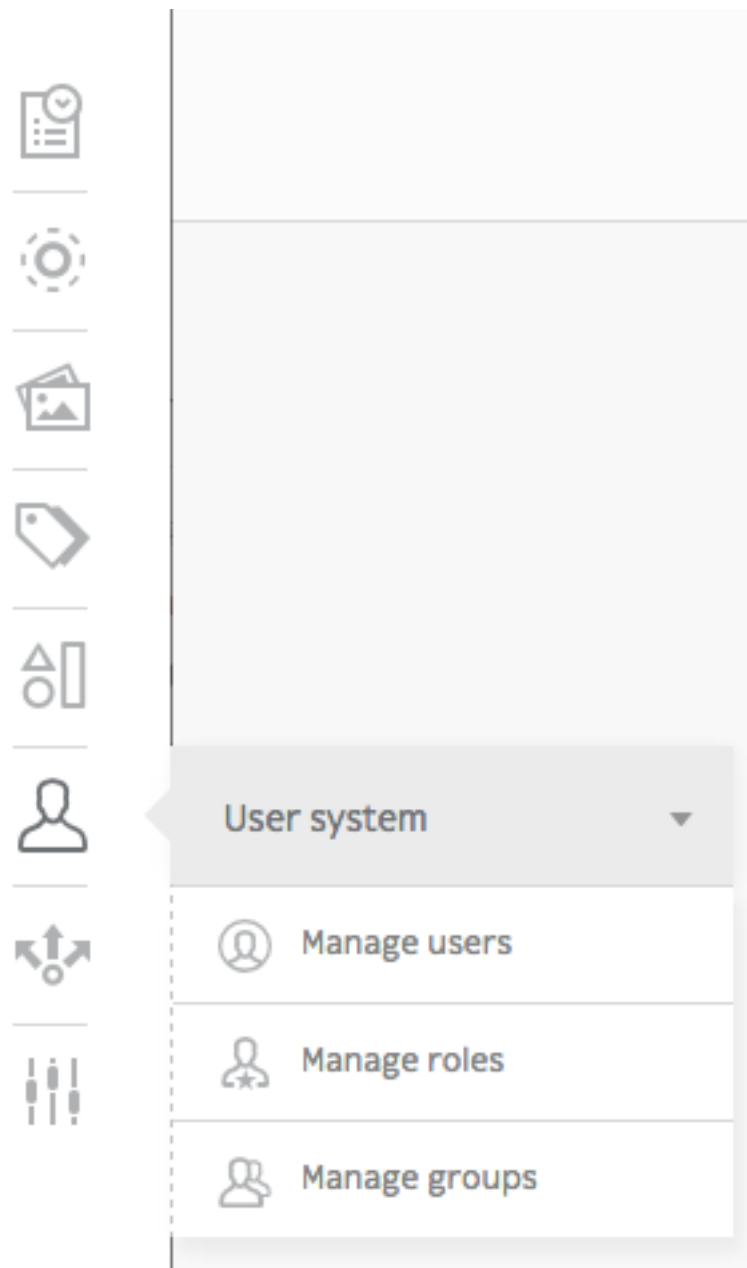


2.1.5 Managing users

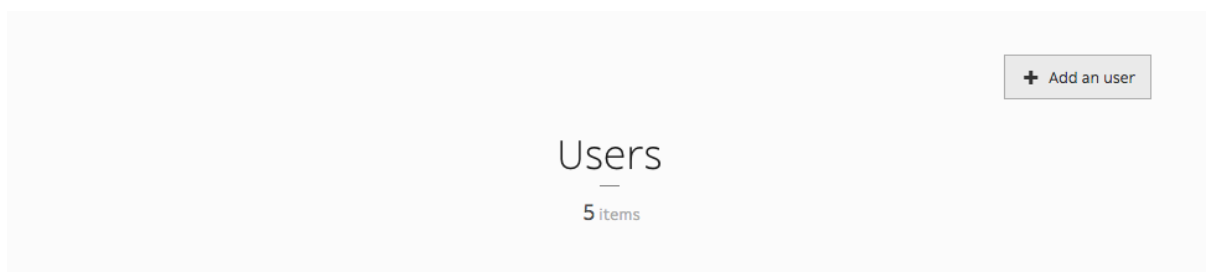
This is a simple guide on how to create and manage users using Roadiz CLI.

There are two ways of adding users, via the back-office and in command-line, both will be displayed in each section.

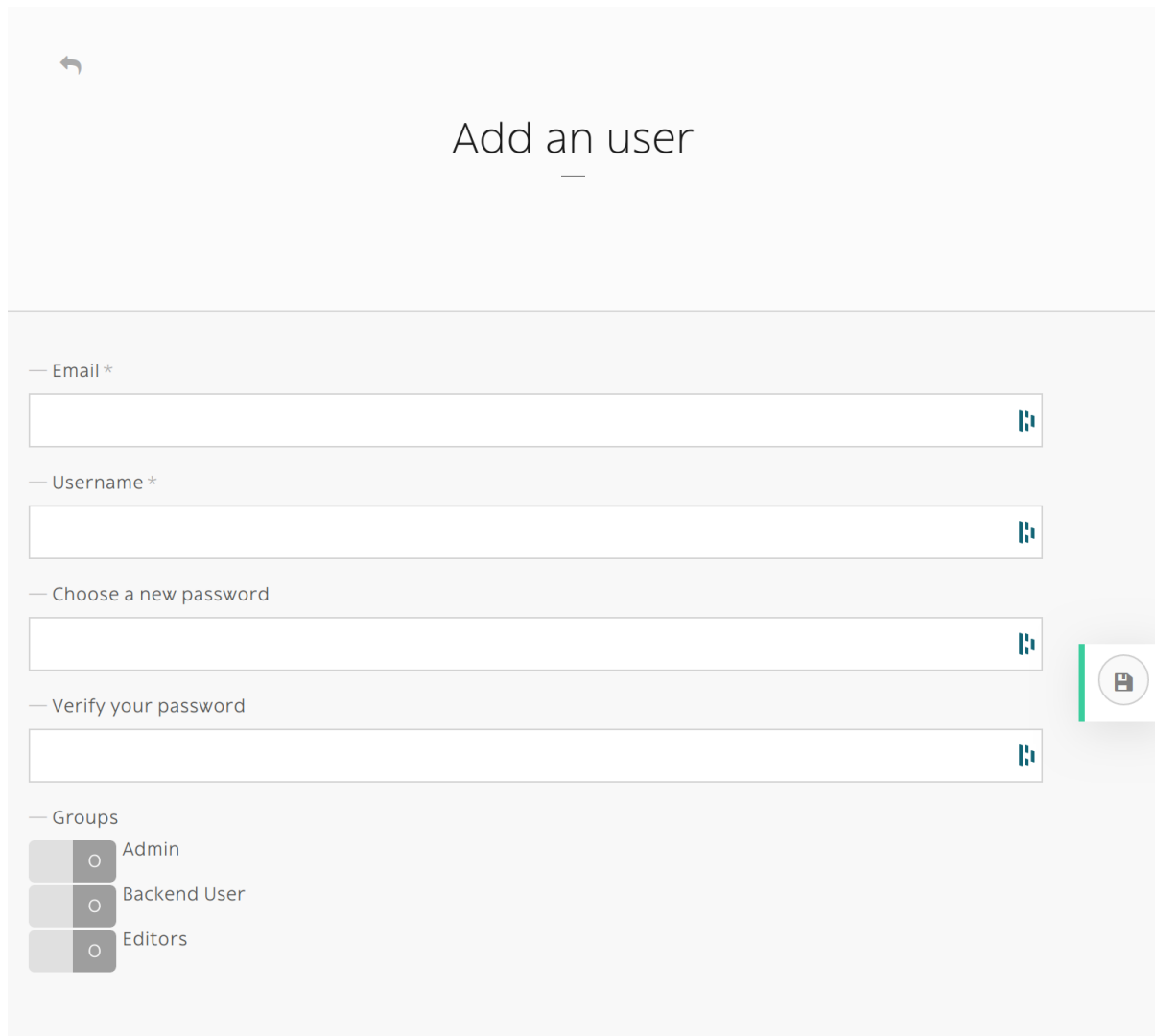
When working with Roadiz in the back-office, you can easily manage users via the *User system* icon in the toolbar.



Create a new user



You can add users simply by clicking *Add an user* button.



If you create an user without specifying its *password*, an email with a password reset link will sent. Make sure that you entered the right email and that your Roadiz website has a *mailer* configured. New user will be locked unless he or she resets its password first.

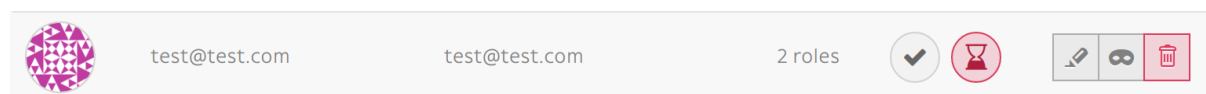
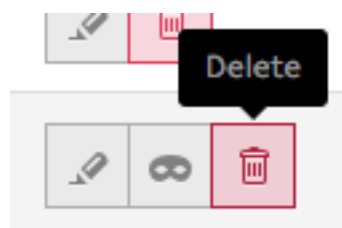


Fig. 2.1: A new user without password will stay locked until he or she resets its password.

The command-line `bin/roadiz users:create loginname` starts a new interactive user creation session. You will create a new user with login and email, you can also choose if it's a backend user and if it's a superadmin.

Delete user

You can remove users by clicking the trashcan icon.



The command `bin/roadiz users:delete loginname` delete the user “loginname”.

Adding role

You can edit a users profile the same way you edit a node-type. You can add roles in the *Roles* tab.

If you want to add `ROLE_SUPERADMIN` role to “test” user, it would look like this in command-line:

```
bin/roadiz users:roles --add loginname
# You will be prompted to choose the ROLE with auto-complete feature.
```

Other action

It is possible to enable or disable users with `users:enable` or `users:disable` command. If a user doesn’t remember his password, you can regenerate it with the `users:password` command. For more informations and more actions, we invite you to check available commands with:

```
bin/roadiz list users
```

Enable SSO for back-office users

Roadiz is compatible with any **OpenID** single sign-on system (such as Google, Exchange, ...) and can be configured to allow your company users to login to your back-office with several `ROLES`.

First, make sure to generate and gather the following information from your *OpenID* provider:

- OpenID client ID

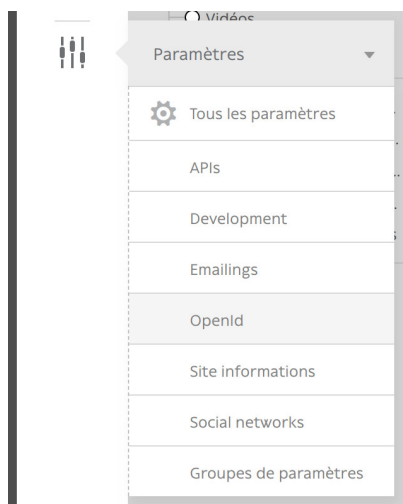
- OpenID client secret
- OpenID auto-discovery URL (i.e. for Google GSuite user <https://accounts.google.com/.well-known/openid-configuration>)

Then you should decide:



















- What *roles* (comma separated) you want to be automatically granted to users connected with your SSO. You always can create a more complex strategy in your website by registering a `RZ\Roadiz\OpenId\Authentication\Provider\JwtRoleStrategy`.

```
$container->extend('jwtRoleStrategies', function (array $strategies, Container $c)
{
    return array_merge($strategies, [
        new MyWebsiteRoleStrategy($c['em'])
    ]);
});
```

- What domain name to restrict users from. This is very important for *Google Suite* users because the auto-discovery is the same for everybody. You may not want to allow every Google Suite users to access your back-office .
- A button label for your back-office login page.



Fill all your gathered information to the right *Roadiz* settings.

Name	Value	Actions
OAuth2 Client ID <small>Client ID to paste from your OpenID identity provider (OAuth2)</small>	<input type="text"/>	  
OAuth2 Client secret <small>Secret to paste from your OpenID identity provider (OAuth2)</small>	<input type="text"/>	  
Connect with OpenId button label <small>Customize login page OpenID button label.</small>	<input type="text" value="Se connecter avec rezo-zero.com"/>	  
Attributed user roles for OpenId domain <small>List user roles, comma separated, to be attributed to every authenticated user with OpenID.</small>	<input type="text" value="ROLE_SUPERADMIN"/>	  
Autodiscovery OpenID URL <small>Standard OpenID autodiscovery URL, required to enable OpenID login in Roadiz CMS.</small>	<input type="text" value="https://accounts.google.com/.well-known"/>	  
Restrict to domain name <small>Allows only domain name emails to authenticate against OpenID provider.</small>	<input type="text" value="rezo-zero.com"/>	  

Then, if your parameter are correct you should see your SSO connect button on *Roadiz* back-office login page. Pay attention that if your SSO users do not have sufficient permissions they may have a 403 error after being

redirected from SSO flow.

The image shows a login interface for 'Backstage'. At the top, the word 'Backstage' is centered. Below it is a button with a key icon and the text 'Se connecter avec rezo-zero.com'. Underneath this button are two input fields: the first is labeled 'Nom d'utilisateur *' and the second is labeled 'Mot de passe *'. Both fields have a small 'D' icon on the right side. Below the password field is a checkbox labeled 'Garder ma session active'. At the bottom of the form is a green button with the text 'Se connecter'.

Note: Google Suite OpenID implementation is described at <https://developers.google.com/identity/protocols/oauth2/openid-connect#discovery>

First, create a new OAuth2 application on <https://console.cloud.google.com/> and follow instructions at <https://developers.google.com/identity/protocols/oauth2/openid-connect#getcredentials>

3.1 Developer documentation

Developer documentation deals with Roadiz' inside and how to create your own themes. It requires a minimum of *Twig* templating knowledge and oriented-object *PHP* skills.

3.1.1 First steps

Requirements

Roadiz is a web application running with PHP. It requires an HTTP server for static assets and **SSH access** with out/ingoing allowed connections. Here is a short summary of mandatory elements before installing Roadiz:

- Nginx or Apache, with a dedicated virtual host as described below.
- **PHP 7.4+ required**
- `php-gd` extension
- `php-intl` extension
- `php-xml` extension
- `php-curl` extension
- `php-mbstring` extension
- JSON needs to be enabled
- ctype needs to be enabled
- Your `php.ini` needs to have the `date.timezone` setting
- You need to have at least version 2.6.21 of libxml
- PHP tokenizer needs to be enabled
- PHP *OPcache* + *APCu* (APC 3.0.17+ or another opcode cache needs to be installed)
- `php.ini` recommended settings
 - `short_open_tag = Off`

```
- magic_quotes_gpc = Off
- register_globals = Off
- session.auto_start = Off
```

- MariaDB 10.5.2+ or MySQL 5.7+ database with *JSON_** functions support
- Zip/Unzip
- cUrl
- Composer
- Git

Note: If you are using a *shared hosting plan*, make sure that your server's SSH connection allows external connections. You can verify with a simple `ping google.com`. If you get request timeouts, your hosting provider might be blocking your SSH connectivity. You should consider using at least a VPS-like hosting. If you really need to setup Roadiz on a simple shared-hosting plan, we encourage you to install it on your own computer and send it with SFTP/FTP (it might take a long time) or *rsync* it.

For Nginx users

If you are using Nginx, you don't have to enable any extensions. You only need to create your *virtual host* using our example file `/samples/nginx.conf`.

For Apache users

If you are using *Apache* do not forget to enable these mods:

- `mod_rewrite`: enabling Roadiz front-controller system.
- `mod_expires`: enabling http cache headers on static assets.

And do not use built-in `mod_php`, prefer *PHP-FPM* !

Then use `/samples/apache.conf` template to create your *virtual host* configuration file. It shows how to set rewrite and secure private folders from being viewed from public visitors.

If you do not have access to your Apache virtual host configuration, you can use the built-in *htaccess* generator:

```
bin/roadiz generate:htaccess
```

This command will generate `.htaccess` files in each critical folder to enable PHP scripts or deny public access to forbidden folders.

Standard Edition

`bin/roadiz generate:htaccess` is not needed anymore with *Roadiz Standard edition* as you will configure your *Apache/Nginx* root to `web/` folder only. No source or configuration files will be exposed anymore.

CMS Structure

- `bin/`: Contains the Roadiz CLI executable
- `docker/`: Tools for creating development and production *Docker* image for your project
- `app/`: Contains every runtime resources from configuration to app cache and nodes-sources entities

- cache/: Every cache file for *Twig* templates and *Intervention Request* images (this folder must be writable for PHP)
- conf/: Your setup configuration file(s) (this folder must be writable for PHP)
- gen-src/: Generated PHP code for Doctrine and your Node-types entities (this folder must be writable for PHP)
- logs/: *Monolog* logs folder
- files/: Private documents and font files root (this folder must be writable for PHP)
- samples/: This folder contains useful configuration and example files for Apache or Nginx webserver
- web/: Your website root, it contains your application entry-points and your public assets
 - files/: Public documents (this folder must be writable for PHP)
 - themes/: public assets mirror for each theme, this folder contains symlinks to your themes/
YourTheme/static folder
- themes/: Contains your own themes and all your website logic
- vendor/: Dependencies folder managed by *Composer*

Install Roadiz Standard Edition

For new projects **Roadiz** can be easily setup using `create-project` command.

```
# Create a new Roadiz project
composer create-project roadiz/standard-edition my-website
cd my-website
# Create a new theme for your project and link assets
# path in public folder
bin/roadiz themes:generate --symlink --relative FooBar
# Go to your theme
cd themes/FooBarTheme
# Install JS dependencies with npm or Yarn
yarn # or npm install
# Build your new theme assets
yarn build # or npm run build
```

Composer will prompt you if you want to can versioning history. Choose the default answer `no` as we definitely want to replace *standard-edition Git* with our own versioning. Then you will be able to customize every files in your projects and save them using *Git*, not only your theme. Of course we added a default `.gitignore` file to prevent your configuration setting and entry points to be committed in your *Git* history. That way you can have different configuration on development and on your production server without bothering about merge conflicts.

Do not forget to add the following lines to your `app/AppKernel.php` file once you generated a new theme:

```
// app/AppKernel.php
public function register(\Pimple\Container $container)
{
    parent::register($container);
    /*
     * Add your own service providers.
     */
    $container->register(new
    ↪\Themes\FooBarTheme\Services\FooBarThemeServiceProvider());
}
```

Note: For *Windows* users, `bin/roadiz themes:generate --symlink --relative FooBar` command can be used without `--relative` option to create **absolute symlinks**. You can even install your theme assets as *hard copies* without `--symlink` option. Make sure that you call regularly `bin/roadiz`

`themes:assets:install FooBar` when using *hard copy* mode to update your assets. You should use *symlinks* if possible to prevent update issues.

Dealing with Roadiz environments

Installation environment

Once you've succeeded to download Roadiz and its dependencies. You'll have to setup its database and every information needed to begin your website.

As every *Symfony* applications do, *Roadiz* works using environments. By default, there is a *production* environment which is handled by `index.php` entry point. At this moment, if you try to connect to your fresh new Roadiz website, you will get an error as we did not install its database and its essential data.

To be able to use Roadiz *install interface*, you'll need to call the *install* entry point. An `install.php` file has been generated when you executed `composer install` command. This environment will be reachable at the Url `http://mywebsite.com/install.php`.

For security reasons, we added an IP filtering in this entry point, you can add your own IP address in the following array: `array('127.0.0.1', 'fe80::1', '::1', '::ffff:127.0.0.1', '::ffff:127.0.0.1')`. This IP filtering is very important if you are working on a public server, no one except you should be able to access *install* entry point.

At the end of the install process, you will be invited to remove the `install.php` file and to connect to your website final URL.

Development environment

Roadiz *production* environment is not made for developing your own themes and extending back-office features. As the same way as *install* environment, we prepared a *dev* environment to disable resources caching and enable debug features. You'll find a `dev.php` file at your website root which was generated at `composer install` command. As well as *install.php* entry point, you'll need to add your own IP address to filter who can access to your *dev* environment.

Preview environment

The *preview* environment is not a real one as it only adds a flag to Roadiz' Kernel to enable back-office users to see unpublished nodes. By default, it is available using `preview.php` entry point, unless you decide to remove it.

Note: Since Roadiz v1.6, preview environment is deprecated in favor of `?_preview=1` query param which allows previewing in any environment, especially for API responses (JSON).

Production environment

This is the default `index.php` entry point which will be called by all your visitors. There is no restriction on it and it will wake up Roadiz application using the strongest caching policies. So it's not recommended for development usage (you would have to flush caches each time you change something in the code).

Clear cache environment

The `clear_cache` environment is only meant to empty Roadiz cache without waking up the whole application. It can be useful if you are using a op-code cache like *APC* or native PHP *OPcache*. These special caches can't be purged from command line utilities, so you need to call a PHP script from your browser or via `curl` to empty them. Like *install* and *dev* environment, `clear_cache.php` is IP-restricted not to allow everyone to flush your dear caches. You'll need to add your own IP address to filter who can access it.

Using Docker for development

Roadiz standard edition is shipped with a `docker-compose` example environment ready to use for development. *Docker* on Linux will provide awesome performances and a production-like environment without bloating your development machine. Performances won't be as good on *macOS* or *Windows* hosts, but it will prevent installing singled versioned PHP and MySQL directly on your computer.

First, edit `.env` file and configure it according to your host machine (you can copy it from `.env.dist` if it does not exist).

```
# Build PHP image
docker-compose build;

# Create and start containers
docker-compose up -d;
```

Then your website will be available at `http://localhost:${APP_PORT}`.

For linux users, where *Docker* is running natively (without underlying virtualization), pay attention that *PHP* is running with *www-data* user. You must update your `.env` file to reflect your local user **UID** during image build.

```
# Type id command in your favorite terminal app
id
# It should output something like
# uid=1000(toto)
```

So use the same uid in your `.env` file **before** starting and building your Docker image.

```
USER_UID=1000
```

Using Vagrant for development

Roadiz comes with a dedicated `Vagrantfile` which is configured to run the official `roadiz/standard-edition` box with a *LEMP* stack (Nginx + PHP7.0-FPM + MariaDB), a *phpMyAdmin*, a *Mail-catcher* and an *Apache Solr server*. This will be useful to develop your website on your local computer.

Note: *Git*, *Composer*, *Virtual Box* and *Vagrant* must be setup on your local computer before going further into Vagrant development.

- <https://getcomposer.org/download/>
- <https://www.virtualbox.org/>
- <https://www.vagrantup.com/>

Once you've created your Roadiz project, *Composer* should has copied `samples/Vagrantfile.sample` file as `Vagrantfile` at your project root. Then do a `vagrant up` in Roadiz' folder. Then *Vagrant* will run your code in `/var/www` and you will be able to completely use `bin/roadiz` commands without bloating your computer with lots of binaries.

Once *vagrant* VM has provisioned you will be able to use:

- `http://192.168.33.10/install.php` to proceed to install.
- `http://192.168.33.10:8983/solr` to use *Apache Solr* admin.
- `http://192.168.33.10/phpmyadmin` for your *MySQL* db admin.
- `http://192.168.33.10:1080` for your *Mailcatcher* tool.

Do not hesitate to add an entry in your `/etc/hosts` file to use a local *domain name* instead of using the private IP address (eg. `http://site1.dev`). And for each Vagrant website, **do not forget to increment your private IP**.

```
# /etc/hosts
# Vagrant hosts
192.168.33.10    site1.dev
192.168.33.11    site2.dev
# ...
```

Note: Be careful, **Windows users**, this Vagrantfile is configured to use a *NFS* fileshare. Disable it if you did not setup a *NFS* emulator. For *OS X* and *Linux* user this is built-in your system, so have fun!

Access entry-points

`web/install.php`, `web/clear_cache.php` and `web/dev.php` entry points are IP restricted to *localhost*. To be able to use them with a *Vagrant* setup, you'll need to add your host machine IP to the `$allowedIp` array. We already set two IP for you that should work for *forwarded* and *private* requests. Just uncomment the following lines in these files and edit them if necessary.

```
$allowedIp = [
    '10.0.2.2',      // vagrant host (forwarded)
    '192.168.33.1', // vagrant host (private)
    '127.0.0.1', 'fe80::1', '::1' // localhost
];
```

Database and Solr credentials

Roadiz *Vagrant* box provides standard *MariaDB* and *Apache Solr* servers which run automatically at launch. Here are their default credentials:

Database credentials

- Host: `localhost`
- User: `roadiz`
- Password: `roadiz`
- Database: `roadiz` or `roadiz_test` (for executing unit tests)

Solr credentials

- Host: `localhost`
- Core: `roadiz` or `roadiz_test` (for executing unit tests)
- User: `none`
- Password: `none`

Warning: Of course, this *Vagrant* virtual machine should not be used for any *production* environment. You can find provisioning scripts on our [Github repository](#), feel free to make enhancement suggestions about them.

Full config.yml example for Vagrant

```
---
appNamespace: "my-roadiz-project"
timezone: "Europe/Paris"
doctrine:
  driver: "pdo_mysql"
  host: "localhost"
  user: "roadiz"
  password: "roadiz"
  dbname: "roadiz"
  charset: utf8mb4
  default_table_options:
    charset: utf8mb4
    collate: utf8mb4_unicode_ci
cacheDriver:
  type: ~
  host: ~
  port: ~
security:
  secret: "my-roadiz-project"
mailer:
  type: ~
  host: "localhost"
  port: 25
  encryption: false
  username: ""
  password: ""
entities:
  - ../vendor/roadiz/roadiz/src/Roadiz/Core/Entities
  - ../vendor/roadiz/models/src/Roadiz/Core/AbstractEntities
  - gen-src/GeneratedNodeSources
rememberMeLifetime: 2592000
additionalServiceProviders: []
additionalCommands: []
assetsProcessing:
  driver: gd
  defaultQuality: 90
  maxPixelSize: 1920
  jpegoptimPath: /usr/bin/jpegoptim
  pngquantPath: /usr/bin/pngquant
solr:
  endpoint:
    localhost:
      host: "localhost"
      port: "8983"
      path: "/solr"
      core: "roadiz"
      timeout: 3
      username: ""
      password: ""
```

Using PHP server for development

If *Vagrant* is too heavy for your purpose, you can simply use *PHP built-in server*.

Following command will launch a web-server listening on all IP addresses on port 8080. We also use a dedicated *router* file to serve static and generated resources:

```
# Create a new Roadiz project
composer create-project roadiz/standard-edition
# Create a new theme for your project
cd standard-edition
bin/roadiz themes:generate --symlink --relative FooBar

# Launch PHP server with web folder as root
php -S 0.0.0.0:8080 -t web vendor/roadiz/roadiz/conf/router.php
# OR use Makefile recipe
make dev-server
```

Standard Edition has a Makefile recipe for launching internal PHP server with a chosen port and IP: `make dev-server`.

If you want to use PHP internal server, make sure you have installed all required PHP extensions and that you have a database server:

- You can use a local MySQL/MariaDB server
- Or use a SQLite3 database, just use `../app/conf/database.db3` path during install.

PHP web server was designed to aid application development. It may also be useful for testing purposes or for application demonstrations that are run in controlled environments. It is not intended to be a full-featured web server. It should not be used on a public network.

Use Mailhog to catch outgoing emails

Contrary to *Vagrant*, using PHP built-in server does not provide any additional tool such as *Mailcatcher* or *Apache Solr*. You can setup *Mailhog* to catch outgoing emails in a clean web interface.

On *macOS*, use *HomeBrew*: `brew update && brew install mailhog`, then configure your PHP `sendmail_path` to use it.

Manual configuration

This section explains how main configuration file `app/conf/config.yml` works. It is way more more convenient than launching Install theme for each configuration update.

Your `app/conf/config.yml` file is built using YAML syntax. Each part matches a Roadiz *service* configuration.

Note: By default, every Roadiz environment read `app/conf/config.yml` configuration file. But you can specify different files for dev and test environments. Just create a `app/conf/config_dev.yml` or `app/conf/config_test.yml` file to override default parameters. You will be able to use a different database, mailer or *Solr* instance not to pollute your production environment.

Source Edition

Roadiz Source edition stores configuration files in `conf/` folder.

DotEnv

`app/conf/config.yml` can resolve `.env` variables if you want to add this file to your Git repository or Docker images. For example:

```
doctrine:
  driver: "pdo_mysql"
  host: '%env(string:MYSQL_HOST)%'
  user: '%env(string:MYSQL_USER)%'
  password: '%env(string:MYSQL_PASSWORD)%'
  dbname: '%env(string:MYSQL_DATABASE)%'
  server_version: '%env(string:MYSQL_VERSION)%'
  # "utf8mb4" charset requires at least mysql 5.7
  # due to large index requirement.
  # otherwise change it to "utf8"
  charset: utf8mb4
  default_table_options:
    charset: utf8mb4
    collate: utf8mb4_unicode_ci
```

This configuration will be resolved against `.env`:

```
# MySQL
MYSQL_ROOT_PASSWORD=root
MYSQL_HOST=db
MYSQL_DATABASE=roadiz
MYSQL_USER=roadiz
MYSQL_PASSWORD=roadiz
MYSQL_VERSION=8.0
```

Doctrine

The most important configuration section deals with database connection which is handled by *Doctrine*:

```
doctrine:
  driver: "pdo_mysql"
  host: "localhost"
  user: ""
  password: ""
  dbname: ""
```

Roadiz uses *Doctrine ORM* to store your data. It will directly pass this YAML configuration to *Doctrine* so you can use every available drivers and options from its documentation at <http://doctrine-dbal.readthedocs.org/en/latest/reference/configuration.html>

Choose your inheritance model

Roadiz' main feature is all about its polymorphic document model which is mapped on a relational database. This requires a challenging structure which can lead to some performance bottlenecks when dealing with more than 20-30 node-types. So we made the data inheritance model configurable to allow switching to `single_table` scheme which will be more performant if you need lots of node-types. However *Single class* model will drop support for indexable fields and you won't be able to create fields with the *same name but not the same type* because all node-type fields will be created in the **same SQL table**.

If you really need to create indexable fields and to mix field types, we advise you to keep the original `joined table` inheritance type which creates a dedicated SQL table for each node-type. *Joined table* inheritance can be very useful with a small number of node-type (max. 20) and very different fields. But its main drawback is that Roadiz needs to *LEFT JOIN* every node-type table for each node-source query, **unless you specify one node-type criteria**.

You can configure *Doctrine* strategy for NodesSources inheritance classes in `app/conf/config.yml`:

```
inheritance:
    # type: joined
    type: single_table
```

- Joined class inheritance: `joined`
- Single table inheritance: `single_table`

Warning: If you change this setting after creating content in your website, all node-sources data will be lost.

Themes

Since *Roadiz v1.0*, themes are statically registered into Roadiz configuration for better performances and delaying database usage. You have to register any front-end theme in your `app/conf/config.yml` file. Theme priority is not handled here but in each of your themes by overriding static `$priority` value;

```
themes:
  -
    classname: \Themes\DefaultTheme\DefaultThemeApp
    hostname: '*'
    routePrefix: ''
  -
    classname: \Themes\FooBarTheme\FooBarThemeApp
    hostname: 'foobar.test'
    routePrefix: ''
```

You can define hostname specific themes and add a route-prefix for your routing. Defaults values are `'*'` for the *hostname* and `''` (empty string) for the route-prefix.

Warning: No theme configuration will lead into a 404 error on your website home page. But you will still have access to the back-office which is now hard-registered into Roadiz configuration.

Cache drivers

When set as *null*, cache drivers will be automatically chosen by Roadiz according to your PHP setup and available extensions.

Sometimes, if a cache extension is available but you don't want to use it, you'll have to specify a cache driver type (use `array` to disable caches). This is a known case when using *OVH* shared hosting plans which provide *memcached* PHP extension but does not let you log in.

```
cacheDriver:
    type: null
    host: null
    port: null
```

Available cache types are:

- *apc*
- *xcache*
- *memcache* (requires host and port configuration)
- *memcached* (requires host and port configuration)
- *redis* (requires host and port configuration)

- *array*

Monolog handlers

By default, Roadiz writes its logs to `app/logs/` folder in a file named after your running environment (eg. `roadiz_prod.log`). But you can also customize *Monolog* to use three different handlers. Pay attention that using custom log handlers will disable default Roadiz logging (except for *Doctrine* one) so it could be better to always use *default* handler along a custom one.

Available handler types:

- **default**: Reproduce the Roadiz default handler which writes to `app/logs/` folder in a file named after your running environment
- **stream**: Defines a log file stream on your local system. **Your path must be writable!**
- **rotating_file**: Defines a log file stream on your local system which will be rotated to avoid large files. **Your path must be writable!**
- **syslog**: Writes to system *syslog*.
- **gelf**: Send GELF formatted messages to an external entry point defined by *url* value. Roadiz uses a fault tolerant handler which **won't trigger any error** if your path is not reachable, so make sure it's correct. It's a good idea to combine a *gelf* handler with a local logging system if your external entry point is down.
- **sentry**: Send logs to your *Sentry* instance. **Requires sentry/sentry PHP library**: `composer require sentry/sentry php-http/curl-client guzzlehttp/psr7`. It's a good idea to combine a *sentry* handler with a local logging system if your external entry point is down.

`type` and `level` values are mandatory for each handlers.

Here is an example configuration:

```
monolog:
  handlers:
    default:
      type: default
      level: INFO
    file:
      type: stream
      # Be careful path must be writable by PHP
      path: '%kernel.log_dir%/roadiz.log'
      level: INFO
      level: INFO
    rotate:
      type: rotating_file
      path: '%kernel.log_dir%/roadiz.log'
      level: DEBUG
    syslog:
      type: syslog
      # Use a custom identifier
      ident: my_roadiz
      level: WARNING
    graylog:
      type: gelf
      # Gelf HTTP entry point url (with optional user:passwd authentication)
      url: http://graylog.local:12202/gelf
      level: WARNING
    sentry:
      type: sentry
      level: WARNING
      url: https://xxxxxx:xxxxxx@sentry.io/1
```

Solr endpoint

Roadiz can use an *Apache Solr* search-engine to index nodes-sources. Add this to your *config.yml* to link your CMS to your *Solr* server:

```
solr:
  endpoint:
    localhost:
      host: "localhost"
      port: "8983"
      path: "/"
      core: "mycore"
      timeout: 3
      username: ""
      password: ""
```

Roadiz CLI command can easily handle Solr index. Just type `./bin/roadiz solr:check` to get more informations.

Reverse proxy cache invalidation

Roadiz can request cache invalidation to external and internal cache proxies such as internal *Symfony* AppCache or a *Varnish* instance. If configured, Roadiz will create a BAN request to each configured proxy **when user clears back-office caches**, and it will create a PURGE request **on each node-source update event** using first reachable node-source URL.

```
reverseProxyCache:
  frontend:
    localhost:
      host: localhost
      domainName: myapp.test
  external:
    host: varnish
    domainName: myapp.test
```

Note: Make sure you [configured your external reverse proxy](#) in order to receive and handle BAN and PURGE HTTP requests.

Cloudflare proxy cache

If you are using Cloudflare as a reverse proxy cache, you can configure Roadiz to send requests to Cloudflare to purge all items or files (when editing a node-source). You need to gather following information:

- Cloudflare zone identifier
- Cloudflare API credentials (Bearer token or email + auth-key)

Then you can configure Roadiz with Bearer token:

```
reverseProxyCache:
  frontend: []
  cloudflare:
    zone: cloudflare-zone
    bearer: ~
```

Or with your Email and AuthKey:


```
reverseProxyCache:
  frontend: []
  cloudflare:
    zone: cloudflare-zone
    email: ~
    key: ~
```

Note: Roadiz uses *Purge all files* and *Purge Files by URL* entry points: <https://api.cloudflare.com/#zone-purge-all-files> which are available on all Cloudflare plans.

Entities paths

Roadiz uses *Doctrine* to map object entities to database tables. In order to make Roadiz more extensible, you can add your own paths to the `entities` part.

```
entities:
  - "../vendor/roadiz/roadiz/src/Roadiz/Core/Entities"
  - "../vendor/roadiz/models/src/Roadiz/Core/AbstractEntities"
  - "gen-src/GeneratedNodeSources"
```

Configure mailer

Roadiz uses *Swift Mailer* to send emails. This awesome library is built to enable different kinds of mail transports and protocols. By default, Roadiz uses your PHP `sendmail` configuration but you can tell it to use another transport (such as an external SMTP server) in your `app/conf/config.yml` file.

You can use *SSL*, *TLS* or no encryption at all.

```
mailer:
  type: "smtp"
  host: "localhost"
  port: 25
  encryption: false
  username: ""
  password: ""
```

Note: Pay attention that many external SMTP services (*Mandrill*, *Mailjet*...) only accept email from validated domains. So make sure that your application uses a known `From:` email sender not to be blacklisted or blocked by these services. If you need your emails to be replied to an anonymous address, use `ReplyTo:` header instead.

Images processing

Roadiz use *Image Intervention* library to automatically create a lower quality version of your image if they are too big. You can define this threshold value in the `assetsProcessing` section. `driver` and `defaultQuality` will be also use for the on-the-fly image processing with *Intervention Request* library.

```
assetsProcessing:
  # gd or imagick (gd does not support TIFF and PSD formats)
  driver: gd
  defaultQuality: 90
  # pixel size limit () after roadiz
  # should create a smaller copy.
  maxPixelSize: 1280
```

```
# Path to jpegoptim binary to enable jpeg optimization
jpegoptimPath: ~
# Path to pngquant binary to enable png optimization (3x less space)
pngquantPath: ~
# List additionnal Intervention Request subscribers
subscribers: []
```

Additional *Intervention Request* subscribers

Any *Intervention Request* subscriber can be added to configuration with its classname and its constructor arguments. Here is an example with `WatermarkListener` which will print some text on all your images.

```
assetsProcessing:
  # List additionnal Intervention Request subscribers
  subscribers:
    - class: "AM\\InterventionRequest\\Listener\\WatermarkListener"
      args:
        - 'Copyright 2017'
        - 3
        - 50
        - "#FF0000"
```

Use `kraken.io` to reduce drastically image sizes

Since you can add *Intervention Request* subscribers, we created a useful one that sends every images to kraken.io services to shrink them. Once you've configured it, do not forget to empty your caches **and** image caches to see changes.

```
assetsProcessing:
  # List additionnal Intervention Request subscribers
  subscribers:
    - class: "AM\\InterventionRequest\\Listener\\KrakenListener"
      args:
        - "your-api-key"
        - "your-api-secret"
        - true
```

Warning: Take note that each generated image is sent to *kraken.io* servers. It can generate some overhead time on the first time you request an image.

Console commands

Roadiz can be executed as a simple CLI tool using your SSH connection. This is useful to handle basic administration tasks with no need of backoffice administration.

```
./bin/roadiz
```

If your system is not configured to have *php* located in `/usr/bin/php` use it this way:

```
php ./bin/roadiz
```

Default command with no arguments will show you the available commands list. Each command has its own parameters. You can use the argument `--help` to get more informations about each tool:

```
./bin/roadiz install --help
```

We even made *Doctrine* CLI tools directly available from Roadiz Console. Be careful, these are powerful commands which can alter your database and make you lose precious data. Especially when you will need to update your database schema after a Theme or a Core update. **Always make a database back-up before any Doctrine operation.**

Additional commands

If you are developing your own theme, you might need to create some custom CLI commands. Roadiz can handle additional commands if you add them in your `app/conf/config.yml` as you would do for any additional *entities*. Make sure that every additional commands extend `Symfony\Component\Console\Command\Command` class.

```
additionalCommands:
    - \Themes\DefaultTheme\Commands\DefaultThemeCommand
```

Upgrading

Note: Always do a database backup before upgrading. You can use the *mysqldump* or *pg_dump* tools to quickly export your database as a file.

- With Roadiz command (MySQL/MariaDB only): `bin/roadiz database:dump -c` will generate a SQL file in `app/` folder
- With a MySQL server: `mysqldump -u[user] -p[user_password] [database_name] > dumpfilename.sql`
- With a PostgreSQL server: `pg_dump -U [user] [database_name] -f dumpfilename.sql`

Use *Composer* to update dependencies or Roadiz itself with *Standard* or *Headless* editions, make sure that your Roadiz *version constraint* is set in your project `composer.json` file, then:

```
composer update -o;
```

Run database registered migrations (some migrations will be skipped according to your database type). Doctrine migrations are the default method to upgrade all none-node-type related entities:

```
bin/roadiz migrations:migrate;
```

In order to avoid losing sensible node-sources data. You should regenerate your node-source entities classes files:

```
bin/roadiz generate:nsentities;
```

Then check if there is no pending SQL changes due to your Roadiz node-types:

```
bin/roadiz orm:schema-tool:update --dump-sql;
# Upgrade node-sources tables if necessary
bin/roadiz orm:schema-tool:update --dump-sql --force;
```

Then, clear your app caches:

```
# Clear cache for each environment
bin/roadiz cache:clear -e dev
bin/roadiz cache:clear -e prod
bin/roadiz cache:clear -e prod --preview
bin/roadiz cache:clear-fpm -e dev
```

```
bin/roadiz cache:clear-fpm -e prod
bin/roadiz cache:clear-fpm -e prod --preview
```

Note: If you are using a runtime cache like OPcache or APCu, you'll need to purge cache manually because it can't be done from a CLI interface as they are shared cache engines. As a last chance try, you can restart your php-fpm service.

Moving a website to another server

Before moving your website, make sure you have backed up your data:

- Dump your database, using classic `mysqldump` or `pg_dump` tools. If you're using *MySQL* `bin/roadiz database:dump -c` command can speed-up the process by naming automatically your file against your *app-namespaces*.
- Archive your files using `bin/roadiz files:export`, Roadiz will create a ZIP file with your public/private documents and fonts.

Moving to a SSH+Git hosting plan or an other development machine

From this point you can install your new web-server, as described in [Install section](#). Pay attention that if your theme needs some additional *composer* dependencies you should *clone/copy* it into your *themes/* folder **before** running `composer install --no-dev`.

Then import your dump and files into your new server.

Once you've imported your database, you must edit manually your *conf/config.yml*, you can reuse the former server's one and adapt its database credentials.

Warning: Do not perform any schema update if no `app/gen-src/GeneratedNodeSources` classes is available, it will erase your `NodeSources` data as their entities files haven't been generated yet.

When you have edited your *app/conf/config.yml* file, regenerate your *Doctrine* entities class files:

```
bin/roadiz generate:nsentities;
```

Now you can perform a schema update without losing your nodes data:

```
bin/roadiz orm:schema-tool:update --dump-sql;
bin/roadiz orm:schema-tool:update --force;
bin/roadiz cache:clear -e prod
bin/roadiz cache:clear -e prod --preview
bin/roadiz cache:clear-fpm -e prod
bin/roadiz cache:clear-fpm -e prod --preview
```

Note: If you are using an OPcode cache like XCache or APC, you'll need to purge cache manually because it can't be done from a CLI interface as they are shared cache engines. The most effective way is to restart your *PHP-FPM* service or *Apache* if your are using *mod_php*.

Install assets

By default, web theme assets are not tracked by *Git*. Make sure that you installed every theme assets using `bin/roadiz themes:assets:install` command. You should use `--symlink --relative` options when

possible to prevent updating assets manually. For Windows users, remove `--relative` option to create *absolute* symlinks.

```
bin/roadiz themes:assets:install --symlink --relative Debug;
bin/roadiz themes:assets:install --symlink --relative Install;
bin/roadiz themes:assets:install --symlink --relative Rozier;
# Then your theme (FooBarTheme)
bin/roadiz themes:assets:install --symlink --relative FooBar;
```

`composer.json` file should execute Roadiz default themes asset install automatically after each update or install.

Synchronize documents and fonts

You can move your files/ folder using SFTP but the best way is to use `rsync` command as it will upload only newer files and it is much faster.

```
# This will synchronize files on your production server from your local Roadiz ↵
↵setup.
# Do not forget ending slash after each path!
rsync -avcz -e "ssh -p 22" /path/to/roadiz/files/ user@my-prod-server.com:/path/to/
↵roadiz/files/
rsync -avcz -e "ssh -p 22" /path/to/roadiz/web/files/ user@my-prod-server.com:/
↵path/to/roadiz/web/files/
```

It works in the other way too. If you want to work on your local copy with up to date files and fonts, you can download actual files from the production website:

```
# This will synchronize files on your local development server from your ↵
↵production server.
# Do not forget ending slash after each path!
rsync -avcz -e "ssh -p 22" user@my-prod-server.com:/path/to/roadiz/files/ /path/to/
↵roadiz/files/
rsync -avcz -e "ssh -p 22" user@my-prod-server.com:/path/to/roadiz/web/files/ /
↵path/to/roadiz/web/files/
```

Moving to a non-SSH hosting plan

You have nearly finished your brand new website using Roadiz. You have been working on your own server using Git and Composer, up to this point everything went well.

Now you have to push to production, but your prod-server has no SSH connection. You are stuck with an SFTP connection or worst, an old FTP one. Don't panic, it will take a little more time but it is still possible.

Warning: Many shared-plan hosting companies offer you only one or two databases. When moving a Roadiz website, make sure that your database is empty and do not contain orphan tables, you must respect the rule "One app = One database".

Note: If you can ZIP on your production server or if you are going to push your files via FTP, do not forget to exclude `.git` and `node_modules` folders! These folders have **lots** of useless files for a production SSH-less environment. Here is a sample ZIP command to exclude them: `zip -r mywebsite.zip mywebsite/ -x "mywebsite/.git/*" "mywebsite/themes/**/static/node_modules/*"`.

- Before transferring your website, make sure you have `.htaccess` file in every sensitive folders. You can use the `bin/roadiz generate:htaccess` on your computer.

- If you have at least SFTP, you should have to rights to zip/unzip on your distant server. So zip the whole Roadiz folder.
- If you only have FTP, you must be prepared to transfer your Roadiz folder, file-by-file. Just get yourself a nice cup of coffee.
- Once everything is copied on your production server, verify than you have the same files as on your dev-server.
- Import your database dump with phpmyadmin or pgmyadmin.
- Edit your `conf/config.yml` to match your new database credentials.
- Verify that root `.htaccess` file contains every information to enable Apache url-rewriting.
- Try to connect to your website
- If it doesn't work or display anything, read your PHP log file to understand where the problem comes from. It might be your database credentials or an outdated PHP version. Check that your hosting manager has installed every needed PHP extensions, see [Requirements](#).

Install Standard Edition on shared hosting

... without SSH commands and FTP .

Modern CMS built on *Composer* and *CLI* commands can't be deployed easily on shared hosting environments on which only FTP is available. Here are some handy tools to deploy a *Roadiz* with FTP.

The first condition is that you'll have to setup a local environment which will be mirrored to your shared hosting FTP, `vendor/` included... yes. Grab a very long cup of coffee when you initiate the first FTP push, it will be long, very long. Next pushes will only push newer files.

The second condition is that you must create all your node-type entities on your local env first to be able to mirror all `GeneratedNodeSources*` classes as you won't be able to generate them on your production env.

Prepare your local env with Makefile

Standard-edition comes with a sample `Makefile` so you can write a `push-prod` recipe to automatize all process using `lftp` command. Make sure it's installed on your computer:

```
# macOS
brew install lftp
# Ubuntu/Debian
apt-get install lftp
# ...
```

This recipe will clear your cache files, generate Apache `.htaccess` files, copy your theme assets as real files, mirror all necessary files without all exceptions (list can be improved) then copy your theme assets back to sym-links.

```
push-prod:
    make cache
    bin/roadiz generate:htaccess
    bin/roadiz themes:assets:install ${THEME_PREFIX}
    lftp -e "mirror --only-newer --parallel=3 -R \
        --exclude '/\.\.+/$$' \
        -x 'app/conf/config.yml' \
        -x '\.env' \
        -x '(README\.md|Makefile|Dockerfile|Vagrantfile)' \
        -x '(bin|docker|samples|tmp|\.git|\.idea|files)/*' \
        -x 'app/(cache|logs|sessions|tmp)/*' \
        -x 'web/files/*' \
        -x 'node_modules/*' \
```

```

-x 'bower_components/' \
-x 'themes/${THEME}$(app|node_modules|webpack)/' \
-x '\.(psd|rev|log|cmd|bat|pif|scr|exe|c?sh|reg|vb?|ws?|sql|db)$$' \
./ ${FTP_REMOTE_PATH}" -u ${FTP_USER}, ${FTP_PASS} ${FTP_HOST}
bin/roadiz themes:assets:install --relative --symlink ${THEME_PREFIX}

```

Make sure your configuration matches your shared hosting plan, for example, adjust your cache driver to `file`, `php` to get decent performances.

```

cacheDriver:
  type: file
  host: null
  port: null

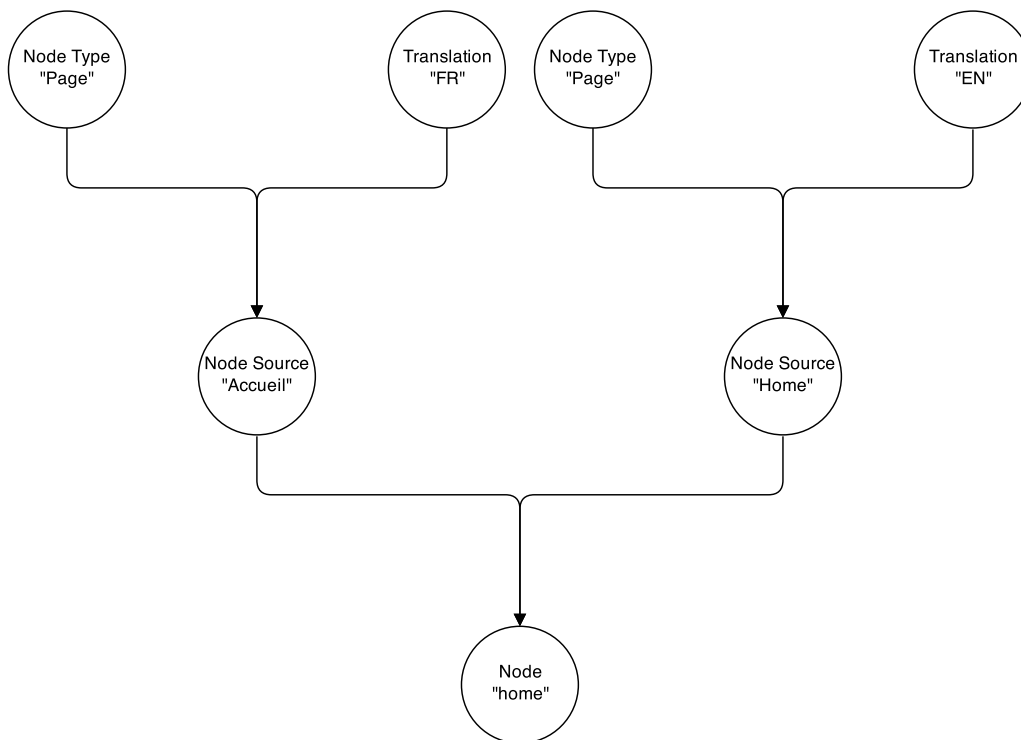
```

3.1.2 Node system

Node-types, nodes-sources and nodes

This part is the most important part of Roadiz. Quite everything in your website will be a node.

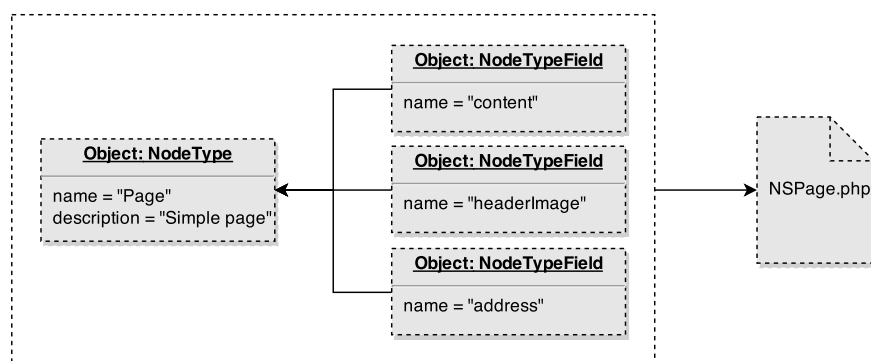
Let's check this simple node schema before explain it.



Now, it's time to explain how it's working!

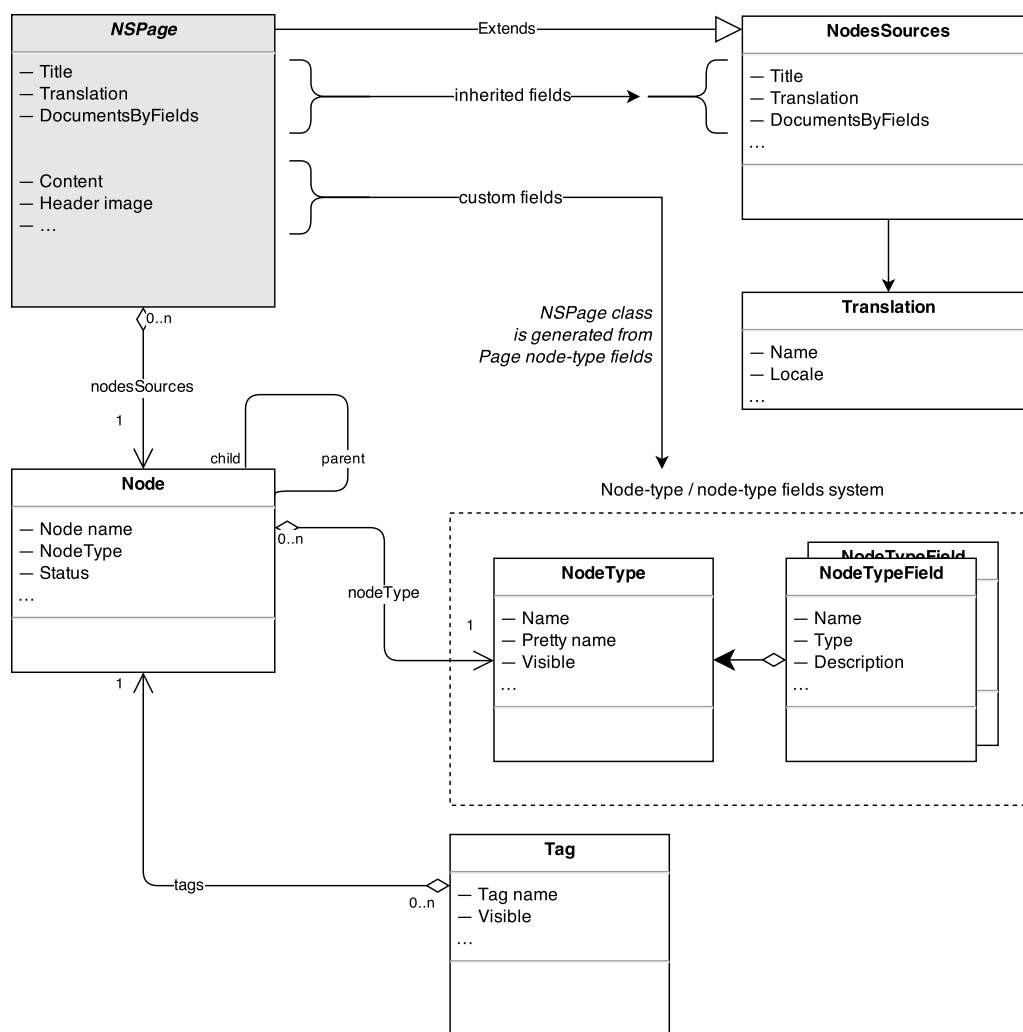
What is a Node-type

A node-type is the blueprint for your node-source. It will contain all fields that Roadiz will use to generate an extended node-source class.



For example, a node-type “Page” will contain “content” and “header image” fields. The “title” field is always available as it is hard-coded in `NodesSources` class. After saving your node-type, Roadiz generates a `NSPage` class which extends the `NodesSources` class. You will find it in the `gen-src/GeneratedNodeSources` (or `app/gen-src/GeneratedNodeSources` with *Roadiz Standard edition*). Then Roadiz calls *Doctrine* update tool to migrate your database schema. **Do not modify the generated class.** You’ll have to update it by the backend interface.

Here is a schema to understand how node-types can define custom fields into node-sources:



Most of node-types management will be done in your backoffice interface. You will be able to create, update node-types objects and each of their node-type fields independently. But if you prefer, you can use CLI commands to create types and fields. With Roadiz CLI commands you get several tools to manage node-types. We really encourage you to check the commands with `--help` argument, as following:


```
bin/roadiz nodetypes:add-fields
bin/roadiz nodetypes:create
bin/roadiz nodetypes:delete
bin/roadiz nodetypes:list
```

Keep in mind that each node-type or node-type fields operation require a database update as Doctrine have to create a specific table per node-type. Do not forget to execute `bin/roadiz orm:schema-tool:update` tools to perform updates. It's very important to understand that *Doctrine* needs to see your node-types generated classes **before** upgrading database schema. If they don't exist, it won't able to create your custom types tables, or worst, it could delete existing data since *Doctrine* won't recognize specific tables.

Now let's have a look on node-sources.

Node-sources and translations

Once your node-type created, its definition is stored in database in `node_types` and `node_type_fields` tables. This informations will be only used to build your node-sources edition forms in backoffice and to build a custom database table.

Inheritance mapping

With Roadiz, each node-types data (called node-sources) is stored in a different table prefixed with `ns_`. When you create a *Page* node-type with 2 fields (*content* and *excerpt*), Roadiz tells Doctrine to build a `ns_page` table with 2 columns and one primary key column inherited from `nodes_sources` table. It's called *inheritance mapping*: your `ns_page` table extends `nodes_sources` table and when you are querying a *Page* from database, Doctrine mix the data coming from these 2 tables to create a complete node-source.

At the end your node-source *Page* won't contain only 2 fields but many more as `NodesSources` entity offers `title`, `metaTitle`, `metaDescription`, `metaKeywords` and others useful data-fields which can be used among all node-types.

Translations

Node-sources inheritance mapping is not only used to customize data but to make data translations available. As you saw in the first picture, each nodes can handle many node-sources, one per translation.

Node-type fields

Roadiz can handle many types of node-type fields. Here is a complete list:

Note: *Title*, *meta-title*, *meta-description* and *keywords* are always available since they are stored directly inside `NodesSources` entity. Then you will be sure to always have a *title* no matter the node-type you are using.

Simple data

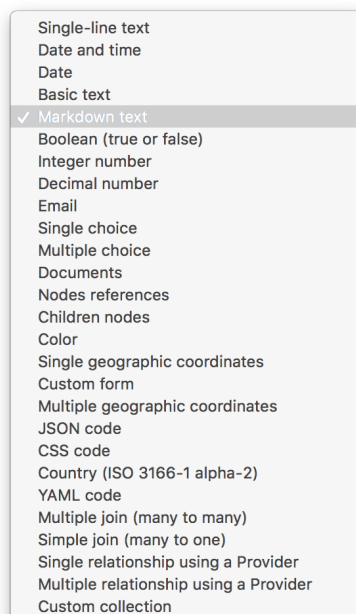
This following fields stores simple data in your custom node-source database table.

- Single-line text
- Date
- Date and time
- Basic text

- Markdown text
- Boolean
- Integer number
- Decimal number
- Email
- Color
- Single geographic coordinates
- JSON code
- CSS code
- Country code (ISO 3166-1 alpha-2)
- YAML code
- Many to many join
- Many to one join
- Single relationship using a provider
- Multiple relationship using a provider
- Custom collection

Note: *Single geographic coordinates* field stores its data in JSON format. Make sure you don't have manually written data in its input field.

Warning: To use *Single geographic coordinates* you must create a *Google API Console* account with *Maps API v3* activated. Then, create a *Browser key* and paste it in "Google Client ID" parameter in Roadiz settings to enable *geographic* node-type fields. If you didn't do it, a simple text input will be display instead of *Roadiz Map Widget*.



Virtual data

Virtual types do not really store data in node-source table. They display custom widgets in your editing page to link documents, nodes or custom-forms with your node-source.

- Documents
- Nodes references
- Custom form

Complex data

These fields types must be created with *default values* (comma separated) in order to display available default choices for “select-box” types:

- Single choice
- Multiple choices
- Children nodes

Children node field type is a special virtual field that will display a custom node-tree inside your editing page. You can add *quick-create* buttons by listing your node-types names in *default values* input, comma separated.

Universal fields

If you need a field to hold exactly the same data for all translations, you can set it as *universal*. For example for documents, numeric and boolean data that do not change from one language to another.

It will duplicate data at each save time from default translation to others. It will also hide the edit field from non-default translation to avoid confusion.

YAML field

When you use YAML field type, you get an additional method to return your code already parsed. If your field is named `data`, your methods will be generated in your *NSEntity* as `getData()` and `getDataAsObject()`.

- `getData()` method will return your YAML code as *string*.
- `getDataAsObject()` will return a mixed data,array or `stdObject` according to your code formatting. This method will throw a `\Symfony\Component\Yaml\Exception\ParseException` if your YAML code is not valid.

Many to many and Many to one joins

You can create custom relations between your node-source and whatever Doctrine entities in *Roadiz* or in your theme.

You must fill the *default values* field for these two types.

```
# Entity class name
classname: Themes\MyTheme\Entities\City
# Displayable is the method used to display entity name
displayable: getName
# Same as Displayable but for a secondary information
alt_displayable: getZipCode
# Searchable entity fields
searchable:
    - name
```

```
- slug
orderBy:
  - field: slug
    direction: ASC
```

You can use a custom proxy entity to support persisting position on your relation. Roadiz will generate a one-to-many relationship with proxy entity instead of a many-to-many. In this scenario you are responsible for creating and migrating Themes\MyTheme\Entities\PositionedCity entity. If you are migrating from a non-proxied many-to-many relation, you should keep the same table and field names to keep data intact.

```
# Entity class name
classname: Themes\MyTheme\Entities\City
# Displayable is the method used to display entity name
displayable: getName
# Same as Displayable but for a secondary information
alt_displayable: getZipCode
# Searchable entity fields
searchable:
  - name
  - slug
# This order will only be used for explorer
orderBy:
  - field: slug
    direction: ASC
# Use a proxy entity
proxy:
  classname: Themes\MyTheme\Entities\PositionedCity
  self: nodeSource
  relation: city
  # This order will preserve position
  orderBy:
    - field: position
      direction: ASC
```

Single and multiple provider

The generic provider type allow you to fetch every data you want through a `Provider` class in your theme. This can be really useful if you need to fetch items from an external API and to reference them in your nodes-sources.

Imagine that you want to link your page with an *Instagram* post. You'll have to create a class that extends Themes\Rozier\Explorer\AbstractExplorerProvider and configure it in your field:

```
classname: Themes\MyTheme\Provider\ExternalApiProvider
```

This provider will implement `getItems`, `getItemsById` and other methods from `ExplorerProviderInterface` in order to be able to display your *Instagram* posts in Roadiz explorer widget and to find your selected items back. Each *Instagram* post will be wrapped in a Themes\Rozier\Explorer\AbstractExplorerItem that will map your custom data to the right fields to be showed in Roadiz back-office.

You'll find an implementation example in Roadiz with Themes\Rozier\Explorer\SettingsProvider and Themes\Rozier\Explorer\SettingExplorerItem. These classes do not fetch data from an API but from your database using `EntityListManager`.

Single and multiple provider types can accept additional options too. If you want to make your provider configurable at runtime you can pass options in your field configuration.

```
classname: Themes\MyTheme\Provider\ExternalApiProvider
options:
  - name: user
    value: me
```

```
- name: access_token
  value: xxxxxx
```

Then you must override your provider's `configureOptions` method to add which options are allowed.

```
use Symfony\Component\OptionsResolver\OptionsResolver;

/**
 * @param OptionsResolver $resolver
 */
public function configureOptions(OptionsResolver $resolver)
{
    $resolver->setDefaults([
        'page' => 1,
        'search' => null,
        'itemPerPage' => 30,
        // add more default options here
        'user' => 'me',
    ]);
    // You can required options
    $resolver->setRequired('access_token');
}
```

Custom collection

Last but not least, you can create a custom collection field to store read-only data using a dedicated *Symfony* `AbstractType`.

You must fill the *default values* field for this type:

```
# AbstractType class name
entry_type: Themes\MyTheme\Form\FooBarType
```

You must understand that *custom collection* data will be stored as JSON array in your database. So you won't be able to query your node-source using this data.

In your `FooBarType`, you'll be able to use *Symfony* standard fields types and **Roadiz** non-virtual fields too such as `MarkdownType`, `JsonType`, `YamlType`.

Handling nodes and their hierarchy

By default, if you use Entities API methods or traversing Twig filters, Roadiz will automatically handle security parameters such as `node.status` and preview mode.

```
// Secure method to get node-sources
// Implicitly check node.status
$this->get('nodeSourceApi')->getBy([
    'node.nodeType' => $blogPostType,
    'translation' => $translation,
], [
    'publishedAt' => 'DESC'
]);
```

This first code snippet is using *Node-source API*. This will automatically check if current user is logged-in and if preview mode is *ON* to display or not *unpublished nodes*.

```
// Insecure method to get node-sources
// Doctrine raw method will get all node-sources
$this->get('em')->getRepository('GeneratedNodeSources\NSBlogPost')->findBy([], [
    'publishedAt' => 'DESC',
```

```
'translation' => $translation,
]);
```

This second code snippet uses standard Doctrine *Entity Manager* to directly grab node-sources by their entity class. This method does not check any security and will return every node-sources, **even unpublished, archived and deleted ones**.

Hierarchy

To trasverse node-sources hierarchy, the easier method is to use *Twig* filters on your `nodeSource` entity. Filters will implicitly set `translation` from origin node-source.

```
{% set children = nodeSource|children %}
{% set nextSource = nodeSource|next %}
{% set prevSource = nodeSource|previous %}
{% set parent = nodeSource|parent %}

{% set children = nodeSource|children({
    'node.visible': true
}) %}
```

Warning: All these filters will take care of publication status and translation, **but not publication date-time neither visibility**.

```
{% set children = nodeSource|children({
    'node.visible': true,
    'publishedAt': ['>=', date()],
}, {
    'publishedAt': 'DESC'
}) %}

{% set nextVisible = nodeSource|next({
    'node.visible': true
}) %}
```

If you need to traverse node-source graph from your controllers you can use the *Entity API*. Moreover, Nodes-sources API allows you to filter using custom criteria if you choose a specific `NodeType`.

```
$children = $this->get('nodeSourceApi')->getBy([
    'node.parent' => $nodeSource,
    'node.visible' => true,
    'publishedAt' => ['>=', new \DateTime()],
    'translation' => $nodeSource->getTranslation(),
], [
    'publishedAt' => 'DESC'
]);
```

Warning: Browsing your node graph (calling children or parents) could be very greedy and unoptimized if you have lots of node-types. Internally *Doctrine* will *inner-join* every nodes-sources tables to perform polymorphic hydratation. So, make sure you filter your queries by one `NodeType` as much as possible with `nodeSourceApi` and `node.nodeType` criteria.

```
// Here Doctrine will only join NSPage table to NodesSources
$children = $this->get('nodeSourceApi')->getBy([
    'node.nodeType' => $this->get('nodeTypesBag')->get('Page'),
    'node.parent' => $nodeSource,
    'node.visible' => true,
    'publishedAt' => ['>=', new \DateTime()],
    'translation' => $nodeSource->getTranslation(),
], [
    'publishedAt' => 'DESC'
]);
```

Visibility

There are two parametres that you must take care of in your themes and your controllers, because they are not mandatory in all website cases:

- Visibility
- Publication date and time

For example, *publication date and time* won't be necessary in plain text pages and not timestampable contents. But we decided to add it directly in NodesSources entity to be able to filter and order with this field in Roadiz back-office. This was not possible if you manually create your own `publishedAt` as a node-type field.

Warning: Pay attention that *publication date and time* (`publishedAt`) and visibility (`node.visible`) **does not prevent** your node-source from being viewed if you did not explicitly forbid access to its controller. This field is not deeply set into Roadiz security mechanics.

If you need so, make sure that your node-type controller checks these two fields and throws a `ResourceNotFoundException` if they're not satisfied.

```
class BlogPostController extends MyAwesomeTheme
{
    public function indexAction(
        Request $request,
        Node $node = null,
        Translation $translation = null
    ) {
        $this->prepareThemeAssignment($node, $translation);

        $now = new DateTime("now");
        if (!$nodeSource->getNode()->isVisible() ||
            $nodeSource->getPublishedAt() < $now) {
            throw new ResourceNotFoundException();
        }

        return $this->render(
            'types/blogpost.html.twig',
            $this->assignment
        );
    }
}
```

Publication workflow

Each Node state is handled by a *Workflow* to switch between the following 5 states:

States

- Node::DRAFT
- Node::PENDING
- Node::PUBLISHED
- Node::ARCHIVED
- Node::DELETED

Transitions

- review
- reject
- publish
- archive
- unarchive
- delete
- undelete

You cannot change a Node status directly using its *setter*, you must use Roadiz main *registry* to perform transition. This can prevent unwanted behaviours and you can track changes with events and guards:

```
/** @var Registry $registry */
$registry = $this->get('workflow.registry');
if ($registry->get($node)->can($node, 'publish')) {
    $registry->get($node)->apply($node, 'publish');
}
```

Generating paths and url

You can use `generateUrl()` in your controllers to get a node-source' path or url. In your Twig template, you can use `path` method as described in Twig section: *Generating paths and url*.

```
use Symfony\Cmf\Component\Routing\RouteObjectInterface;

class BlogPostController extends MyAwesomeTheme
{
    public function indexAction(
        Request $request,
        Node $node = null,
        Translation $translation = null
    ) {
        $this->prepareThemeAssignment($node, $translation);

        // Generate a path for current node-source
        $path = $this->generateUrl(
            RouteObjectInterface::OBJECT_BASED_ROUTE_NAME,
            [RouteObjectInterface::ROUTE_OBJECT => $this->nodeSource]
        );

        // Generate an absolute URL for current node-source
        $absoluteUrl = $this->generateUrl(
            RouteObjectInterface::OBJECT_BASED_ROUTE_NAME,
            [RouteObjectInterface::ROUTE_OBJECT => $this->nodeSource],
```



```

        UrlGeneratorInterface::ABSOLUTE_URL
    );
}
}

```

Overriding default node-source path generation

You can override default node-source path generation in order to use `path()` method in your *Twig* templates but with a custom logic. For example, you have a *Link* node-type which purpose only is to link to an other node in your website. When you call *path* or *URL* generation on it, you should prefer getting its linked node path, so you can listen to `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesPathGeneratingEvent`:class event and stop propagation to return your linked node path instead of your *link* node path.

```

use GeneratedNodeSources\NSLink;
use Symfony\Component\EventDispatcher\EventDispatcherInterface;
use Symfony\Component\EventDispatcher\EventSubscriberInterface;
use RZ\Roadiz\Core\Events\NodesSources\NodesSourcesPathGeneratingEvent;

class LinkPathGeneratingEventListener implements EventSubscriberInterface
{
    public static function getSubscribedEvents()
    {
        return [
            NodesSourcesPathGeneratingEvent::class => ['onLinkPathGeneration'],
        ];
    }

    /**
     * @param NodesSourcesPathGeneratingEvent $event
     * @param string                          $eventName
     * @param EventDispatcherInterface        $dispatcher
     */
    public function onLinkPathGeneration(
        NodesSourcesPathGeneratingEvent $event,
        $eventName,
        EventDispatcherInterface $dispatcher
    ) {
        $nodeSource = $event->getNodeSource();

        if ($nodeSource instanceof NSLink) {
            if (filter_var($nodeSource->getExternalUrl(), FILTER_VALIDATE_URL)) {
                /*
                 * If editor linked to an external link
                 */
                $event->stopPropagation();
                $event->setComplete(true);
                $event->setContainsScheme(true); // Tells router not to prepend
                ↪protocol and host to current URL
                $event->setPath($nodeSource->getExternalUrl());
            } elseif (count($nodeSource->getNodeReferenceSources()) > 0 &&
                null !== $linkedSource = $nodeSource->
                ↪getNodeReferenceSources()[0]) {
                /*
                 * If editor linked to an internal page through a node reference
                 */
                /** @var FilterNodeSourcePathEvent $subEvent */
                $subEvent = clone $event;
                $subEvent->setNodeSource($linkedSource);
                /*

```

```

        * Dispatch a path generation again for linked node-source.
        */
        $dispatcher->dispatch(NodesSourcesEvents::NODE_SOURCE_PATH_
↳GENERATING, $subEvent);
        /*
        * Fill main event with sub-event data
        */
        $event->setPath($subEvent->getPath());
        $event->setComplete($subEvent->isComplete());
        $event->setParameters($subEvent->getParameters());
        $event->setContainsScheme($subEvent->containsScheme());
        // Stop propagation AFTER sub-event was dispatched not to prevent_
↳it to perform.
        $event->stopPropagation();
    }
}
}
}

```

Then register your subscriber to the Roadiz event dispatcher in your theme `setupDependencyInjection`:

```

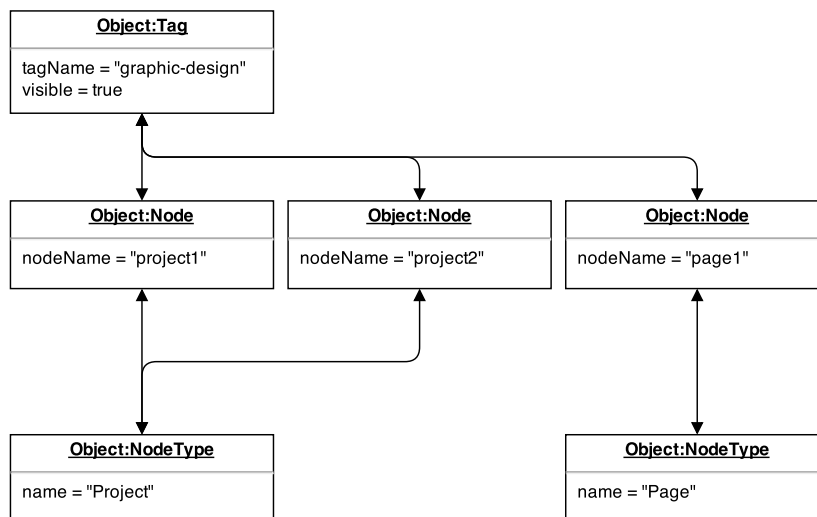
/** @var EventDispatcher $dispatcher */
$dispatcher = $container['dispatcher'];
$dispatcher->addSubscriber(new LinkPathGeneratingEventListener());

```

This method has an other great benefit: it allows your path logic to be cached inside node-source url' cache provider, instead of generating your custom URL inside your Twig templates or PHP controllers.

3.1.3 Tag system

Nodes are essentially hierarchical entities. So we created an entity to link nodes between them no matter where/what they are. Tags are meant as *tag* nodes, we couldn't be more explicit. But if you didn't understand here is a schema:

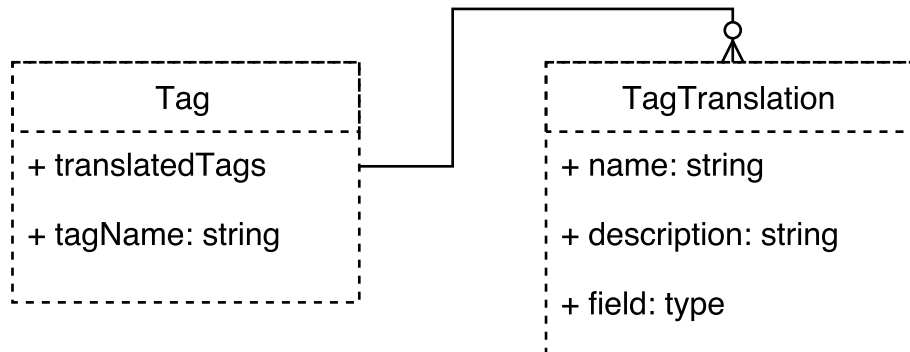


You can see that tags can gather heterogenous nodes coming from different types (pages and projects). Tags can be used to display a category-navigation on your theme or to simply tidy your backoffice node database.

Did you notice that Tags are related to Nodes entities, not NodesSources? We thought that it would be easier to manage that way not to forget to tag a specific node translation. It means that you won't be able to differentiate tag two NodesSources, if you absolutely need to, we encourage you to create two different nodes.

Translate tags

You will notice that tags work the same way as nodes do. By default, *tags names* can't contain special characters in order to be used in URLs. So we created `TagTranslation` entities which stand for Tag's sources:



In that way you will be able to translate your tags for each available languages and link documents to them.

Tag hierarchy

In the same way as *Nodes* work, tags can be nested to create *tag groups*.

Displaying node-source tags with Twig

Tag translations are already set up to track your current locale if you fetched them using `|tags` Twig filter. Simply use `getTranslatedTags()->first()` Tag method to use them in your templates.

```

{% set tags = nodeSource|tags %}

<ul>
{% for tag in tags %}
    {% set tagTranslation = tag.translatedTags.first %}
    <li id="{{ tag.tagName }}">{{ tagTranslation.name }}</li>
{% endfor %}
</ul>
  
```

Tags translations documents

Documents can be linked to your tag translations. They will be different for each translation, so make sure to synchronize them manually if you want to use the same document for all translations.

They are available with `getDocuments()` method and will be ordered by **position only**.

Imagine, you want to link a PDF document for each of your tags, you can create a download link as described below:

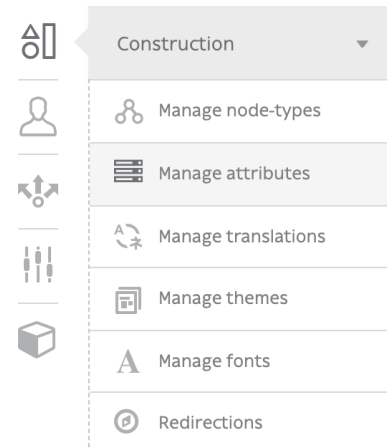
```

{% set tags = nodeSource|tags %}
<ul>
{% for tag in tags %}
    {% set tagTranslation = tag.translatedTags.first %}
    <li id="{{ tag.tagName }}">
        <p>{{ tagTranslation.name }}</p>
        {% if tagTranslation.documents[0] %}
            <a href="{{ tagTranslation.documents[0]|url }}" class="tag-document">{
↪ % trans %}download_tag_pdf{% endtrans %}</a>
            {% endif %}
        </li>
  
```

```
{% endfor %}
</ul>
```

3.1.4 Attributes

Attributes are entities meant to qualify features on other entities, such as *nodes*. The main difference between *tags* and *attributes* is that you can set a value for each attributed *node*.



The attribute “Color” can be set to “red” for one node and set to “green” for an other one.

Okay, but now what is the difference between *attributes* and node-type fields? Not so much because node-type fields describe your node’ features too, but they are fixed and defined by the developer. Once your node-type fields are created, you have to implement your feature in your *Twig* templates, and translate it in your XLF files too.

Attributes are meant to be created and added by editors so they can use them in your website lifecycle without needing any further development.

From the developer perspective, attributes are just a collection of entities to be displayed in a loop. Then your editor can create new ones and be sure they will be displayed without any additional development.

```
<ul class="block-attributes">
  {% for attributeValueTranslation in nodeSource|attributes %}
    <li>
      {% if attributeValueTranslation.attribute.documents|length %}
        {% for document in attributeValueTranslation.attribute.documents %}
          <figure>{{ document|display }}</figure>
        {% endfor %}
      {% endif %}
      <strong>{{ attributeValueTranslation|attribute_label(translation) }}:</
→strong>
      {% if attributeValueTranslation is datetime %}
        {{ attributeValueTranslation.value|format_datetime('medium', 'short
→', locale=app.request.locale) }}
      {% elseif attributeValueTranslation is date %}
        {{ attributeValueTranslation.value|format_date('medium', '
→locale=app.request.locale) }}
      {% elseif attributeValueTranslation is country %}
        {{ attributeValueTranslation.value|country_name(request.locale) }}
      {% else %}
        {{ attributeValueTranslation.value }}
      {% endif%}
    </li>
  {% endfor %}
</ul>
```

If you grouped your attributes, you can use `grouped_attributes` filter instead:

```

<ul class="block-attributes">
  {% for item in nodeSource|grouped_attributes %}
    <li>
      {% if item.group %}
        <strong>{{ item.group|attribute_group_label(translation) }}</
→strong>
        {% endif %}
        <ul>
          {% for attributeValueTranslation in item.attributeValues %}
            <li>
              {% if attributeValueTranslation.attribute.documents|length
→%}
                {% for document in attributeValueTranslation.attribute.
→documents %}
                  <figure>{{ document|display }}</figure>
                  {% endfor %}
                  {% endif %}
                  <strong>{{ attributeValueTranslation|attribute_
→label(translation) }}:</strong>
                  {% if attributeValueTranslation is datetime %}
                    {{ attributeValueTranslation.value|format_datetime(
→'medium', 'short', locale=app.request.locale) }}
                  {% elseif attributeValueTranslation is date %}
                    {{ attributeValueTranslation.value|format_date('medium
→', locale=app.request.locale) }}
                  {% elseif attributeValueTranslation is country %}
                    {{ attributeValueTranslation.value|country_
→name(request.locale) }}
                  {% else %}
                    {{ attributeValueTranslation.value }}
                  {% endif%}
                </li>
              {% endfor %}
            </ul>
          </li>
        {% endfor %}
      </ul>

```

Attributes types

Create an attribute

Code *

t_shirt_size

Attribute type *

Basic text string

Translations

T-Shirt size

English

Available options (for choice type)

Taille du t-shirt

French

Available options (for choice type)

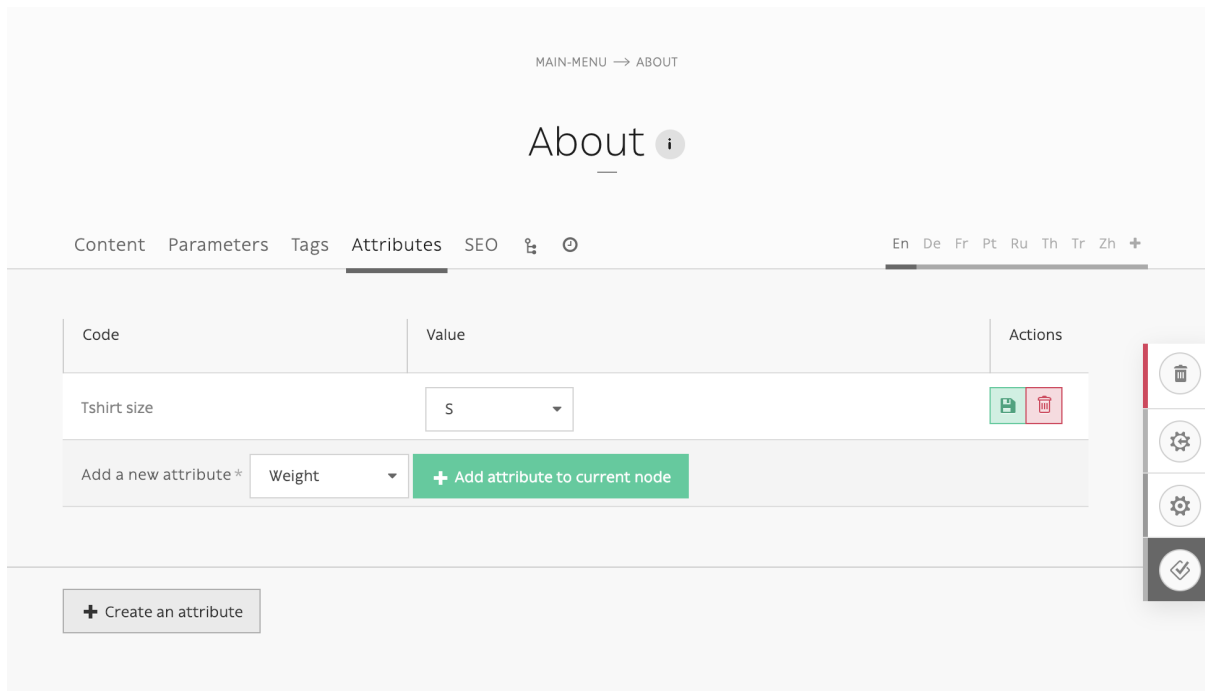
Save

Up

- *String*
- *Date*
- *Date and time*
- *Single choice*: choice among defined options in your attribute
- *Boolean*
- *Integer*
- *Decimal*
- *Email*
- *Color*
- *Country*: ISO 2-letters country code

Add attributes to nodes

Attribute section is available for any node in any translations.



Twig extension

Several filters and tests are available to ease up templating with *attributes*:

Filters

- `attributes`: same as `node_source_attributes()` method, get all available attributes from a `NodesSources`.
- `grouped_attributes`: same as `node_source_grouped_attributes()` method, get all available attributes from a `NodesSources` and gather them into their **group**.
- `attribute_label(translation)`: get attribute translated label or code if not translated.
- `attribute_group_label(translation)`: get attribute group translated name or `canonicalName` if not translated.

Tests

- `datetime`
- `date`
- `country`
- `boolean`
- `choice`
- `enum`

3.1.5 Go headless

Since Roadiz v1.6, you can create a 100% *headless* project using:

```
# Create a new Roadiz project
composer create-project roadiz/headless-edition myheadless_project
```

No more theme, just business logic

Headless edition get rid of themes logic in favor of a simple `src/` folder to add custom business logic. All API features are handled by *AbstractApiTheme* which is registered as a *composer* dependency and in your `src/AppKernel.php` file.

```
# src/AppKernel.php
public function register(Container $container): void
{
    parent::register($container);
    // Headless edition: do not remove API services
    $container->register(new
↳ \Themes\AbstractApiTheme\Services\AbstractApiServiceProvider());
    $container->register(new \App\AppServiceProvider());

    /*
     * Add your own service providers.
     */
}
```

Headless structure

- `bin/`: Contains the Roadiz CLI executable
- `docker/`: Tools for creating development and production *Docker* image for your project
- `app/`: Contains every runtime resources from configuration to app cache and nodes-sources entities
 - `cache/`: Every cache file for *Twig* templates and *Intervention Request* images (this folder must be writable for PHP)
 - `conf/`: Your setup configuration file(s) (this folder must be writable for PHP)
 - `gen-src/`: Generated PHP code for Doctrine and your Node-types entities (this folder must be writable for PHP)
 - `logs/`: *Monolog* logs folder
- `files/`: Private documents and font files root (this folder must be writable for PHP)
- `samples/`: This folder contains useful configuration and example files for Apache or Nginx webserver
- `web/`: Your website root, it contains your application entry-points and your public assets
 - `files/`: Public documents (this folder must be writable for PHP)
 - `themes/`: public assets mirror for each theme, this folder contains symlinks to your `themes/YourTheme/static` folder
- `src/`: Contains all your website logic
- `vendor/`: Dependencies folder managed by *Composer*

Configure CORS

```
# src/AppServiceProvider.php
/**
 * @return array
 */
```



```
$container['api.cors_options'] = [
    'allow_credentials' => true,
    // Allow all origin or defines some regex domains
    'allow_origin' => ['*'],
    'allow_headers' => true,
    'origin_regex' => false,
    'allow_methods' => ['GET'],
    // Expose Link header for NuxtJS to resolve other translations
    'expose_headers' => ['Link'],
    'max_age' => 60*60*24
];
```

API usage and authentication

API endpoints are described in detail in [AbstractApiTheme](#) repository README. You'll get automatic:

- Collection listing for all nodes-sources
- Collection listing per node-type
- Single item endpoint
- User endpoint
- ...

All with query-string parameters for searching and filtering JSON output.

API can be accessed using:

- Simple X-API-Key access per application for non-user related content
- Or **OAuth2** applications with `client_credentials` or `authorization_code` grant types.

3.1.6 Themes

Creating a theme

Roadiz themes are one of the main parts of the CMS. They allow you to create your really personal website. You can duplicate an existing theme to customize stylesheets and images. Or you can start from ground and build your very own theme using our API. Every visible part of Roadiz is a theme. Even backoffice interface is a theme, and it's called *Rozier* according to the street name where REZO ZERO created it.

Each theme is a folder which must be placed in `themes/` folder. Roadiz *Sources* comes with 3 default themes :

- *Install* : It's the first page theme you see when you launch Roadiz in your browser for the first time.
- *Rozier* : Here is the REZO ZERO designed backoffice for Roadiz, it's available from `rz-admin/` url and protected by firewall.
- *DefaultTheme* : It's a demo theme which is mainly used to demonstrate basic Roadiz features and to try the back-office editing capabilities.

As these 3 themes come bundled with Roadiz, you can't edit or update their files. Your changes would be overrode the next time you update Roadiz via Git or direct download. If you want to create your own Backoffice, you can. Just name it differently and hook it in backoffice or using CLI commands.

Source Edition

If you are using Roadiz *Source edition*, we configured *Git* versioning tool to ignore every additional theme you create in `/themes` folder. So you can **initialize your a new git repository per custom theme you create**. That way you can use code versioning independently from Roadiz updates.

Preparing your own frontend theme

To start from a fresh and clean foundation, we built a `BaseTheme` to fit our needs with many starter node-types and a front-end framework using *ES6* and *Webpack*.

```
# Use Roadiz command to pull and rename BaseTheme after your own project
bin/roadiz themes:generate --relative --symlink MyAwesome
```

Your theme will be generated as `/themes/MyAwesomeTheme` with `/themes/MyAwesomeTheme/MyAwesomeThemeApp.php` class.

Standard Edition

Roadiz *Standard edition* will create a symbolic link into `web/` folder to publish your new theme public assets as `/web/themes/MyAwesomeTheme/static`. Make sure that your system supports *symbolic links*.

Edit your main class informations (`MyAwesomeThemeApp.php`)

```
/*
 * Copyright REZO ZERO 2016
 *
 * Description
 *
 * @file MyAwesomeThemeApp.php
 * @copyright REZO ZERO 2014
 * @author Ambroise Maupate
 */
namespace Themes\MyAwesomeTheme;

use RZ\Roadiz\CMS\Controllers\FrontendController;
use RZ\Roadiz\Core\Entities\Node;
use RZ\Roadiz\Core\Entities\Translation;
use Symfony\Component\HttpFoundation\Request;
use Symfony\Component\HttpFoundation\Response;

/**
 * MyAwesomeThemeApp class
 */
class MyAwesomeThemeApp extends FrontendController
{
    protected static $themeName = 'My awesome theme';
    protected static $themeAuthor = 'Ambroise Maupate';
    protected static $themeCopyright = 'REZO ZERO';
    protected static $themeDir = 'MyAwesomeTheme';
    protected static $backendTheme = false;

    //...
}
```

Then you will be able to add your fresh new theme into Roadiz backoffice or through Roadiz install.

Static routing

Before searching for a node's Url (Dynamic routing), Roadiz will parse your theme `route.yml` to find static controllers and actions to execute. Static actions just have to comply with the Request / Response scheme. It is advised to add `$_locale` and `$_route` optional arguments to better handle multilingual pages.

```
foo:
  path: /foo
  defaults:
    _controller: Themes\MyAwesomeTheme\Controllers\FooBarController::fooAction
bar:
  path: /{_locale}/bar
  defaults:
    _controller: Themes\MyAwesomeTheme\Controllers\FooBarController::barAction
  requirements:
    # Use every 2 letter codes
    _locale: "[a-z]{2}"
```

```
public function fooAction(Request $request)
{
    $translation = $this->bindLocaleFromRoute($request, 'en');
    $this->prepareThemeAssignment(null, $translation);

    return $this->render('foo.html.twig', $this->assignment);
}

public function barAction(
    Request $request,
    $_locale = null,
    $_route = null
) {
    $translation = $this->bindLocaleFromRoute($request, $_locale);
    $this->prepareThemeAssignment(null, $translation);

    return $this->render('bar.html.twig', $this->assignment);
}
```

Dynamic routing

Note: Every node-types will be handled by a specific Controller. If your created a “Page” type, Roadiz will search for a ... \Controllers\PageController class and it will try to execute the indexAction method.

An indexAction method must comply with the following signature. It will take the HttpFoundation’s Request as first then a Node and a Translation instances. These two last arguments will be useful to generate your page information and to render your current node.

```
/**
 * Default action for any Page node.
 *
 * @param Symfony\Component\HttpFoundation\Request $request
 * @param RZ\Roadiz\Core\Entities\Node $node
 * @param RZ\Roadiz\Core\Entities\Translation $translation
 *
 * @return Symfony\Component\HttpFoundation\Response
 */
public function indexAction(
    Request $request,
    Node $node = null,
    Translation $translation = null
) {
    $this->prepareThemeAssignment($node, $translation);

    return $this->render(
```

```
'types/page.html.twig', // Twig template path
$this->assignation        // Assignment array to fill template placeholders
);
}
```

As *Symfony* controllers do, every Roadiz controllers actions have to return a valid *Response* object. This is the *render method* purpose which will generate a standard *html* response using a *Twig* template and an *assignation* array.

Note: It's very easy to create *JSON* responses for your API with Roadiz. You just have to replace `$this->render($template, $assignation);` method with `$this->renderJson($data);`. This method is a shortcut for new `JsonResponse($data);`.

Home page case

Homepage is always a special page to handle. With Roadiz you have the choice to handle it as a static page or as a dynamic page. In both case you'll need to setup a static route in your theme `Resources/routes.yml` file.

```
homePage:
  path: /
  defaults:
    _controller: Themes\MyAwesomeTheme\MyAwesomeThemeApp::homeAction
homePageLocale:
  path: /{_locale}
  defaults:
    _controller: Themes\MyAwesomeTheme\MyAwesomeThemeApp::homeAction
  requirements:
    # Use every 2 letter codes
    _locale: "[a-z]{2}"
```

Now you can code your `homeAction` method in `MyAwesomeThemeApp` class. It will need 2 arguments:

- A Request object: `$request`
- An optional locale string variable `$_locale = null`

Dynamic home

If your home page is built with a node. You can tell Roadiz to handle home request as a *Page* request (if your home is a *page* type node) using `$this->handle($request);` method. This method will use the `PageController` class and `page.html.twig` template to render your home. This can be useful when you need to switch your home page to an other page, there is no need to make special ajustments.

```
/**
 * {@inheritdoc}
 */
public function homeAction(
    Request $request,
    $_locale = null
) {
    /**
     * Get language from static route
     */
    $translation = $this->bindLocaleFromRoute($request, $_locale);
    $home = $this->getHome($translation);

    /**
     * Render Homepage according to its node-type controller
     */
}
```

```

    */
    return $this->handle($request, $home, $translation);
}

```

Static home

Imagine now that your home page has a totally different look than other pages. Instead of letting `handle()` method returning your Response object, you can create it directly and use a dedicated `home.html.twig` template. The fourth argument `static::getThemeDir()` is optional, it explicits the namespace to look into. It becomes useful when you mix several themes with the same templates names.

```

/**
 * {@inheritdoc}
 */
public function homeAction(
    Request $request,
    $_locale = null
) {
    /*
     * Get language from static route
     */
    $translation = $this->bindLocaleFromRoute($request, $_locale);
    $home = $this->getHome($translation);

    /*
     * Render Homepage manually
     */
    $this->prepareThemeAssignment($home, $translation);

    return $this->render('home.html.twig', $this->assignment);
}

```

Keep in mind that `prepareThemeAssignment` method will assign for you some useful variables no matter you choice a dynamic or a static home handling:

- `node`
- `nodeSource`
- `translation`

Using Twig

Note: Twig is the default rendering engine for *Roadiz CMS*. You'll find its documentation at <http://twig.sensiolabs.org/doc/templates.html>

When you use *Dynamic routing* within your theme, Roadiz will automatically assign some variables for you.

- **cms_version** — [string]
- **cms_prefix** — [string]
- **help_external_url** — [string] Back-office help URL (this can be overridden in your theme if your wrote a dedicated documentation for your customers)
- **is_debug** - [boolean]
- **is_preview** - [boolean]
- **is_dev_mode** - [boolean]

- **is_prod_mode** - [boolean]
- **head**
 - **devMode** — [boolean]
 - **universalAnalyticsId** — [string]
 - **useCdn** - [boolean]
 - **baseUrl** — [string] Server base Url. Basically your domain name, port and folder if you didn't setup Roadiz at you server root
 - **filesUrl** — [string]
- **bags**
 - **settings** — [SettingsBag]
 - **nodeTypes** — [NodeTypesBag]
 - **roles** — [RolesBag]
- **app**
 - **session** — [Session]
 - **user** — [User]
 - **request** — [object] Symfony request object which contains useful data such as current URI or GET parameters

There are some more content only available from *FrontendControllers*.

- **_default_locale** — [string]
- **meta**
 - **siteName** — [string]
 - **siteCopyright** — [string]
 - **siteDescription** — [string]

Then, in each dynamic routing *actions* you will need this line `$this->storeNodeAndTranslation($node, $translation)`; in order to make page content available from your Twig template.

- **node** — [object]
- **nodeSource** — [object]
- **translation** — [object]
- **pageMeta**
 - **title** — [string]
 - **description** — [string]
 - **keywords** — [string]

All these data will be available in your Twig template using `{{ }}` syntax. For example use `{{ pageMeta.title }}` inside your head's `<title>` tag. You can of course call objects members within Twig using the *dot* separator.

```
<article>
<h1><a href="{{ path(nodeSource) }}">{{ nodeSource.title }}</a></h1>
<div>{{ nodeSource.content|markdown }}</div>

{% set images = nodeSource.images %}

{% for image in images %}
    {% set imageMetas = image.documentTranslations.first %}
```

```

    <figure>
        {{ image|display({'width':200 }) }}
        <figcaption>{{ imageMetas.name }} -- {{ imageMetas.copyright }}</
→figcaption>
    </figure>
    {% endfor %}
</article>

```

Checking role permissions

You can use standard Twig `is_granted` method to check if current authenticated user can access resources according to Roadiz *ROLES*.

```

{% if is_granted('ROLE_ACCESS_TAGS') %}
<div class="tags">
    User can access tags
</div>
{% endif %}

```

Checking node-sources type

You can use every node-type names as simple *Twig test* against your `nodeSource` variables.

```

{% set parentNodeSource = nodeSource|parent %}

{% if parentNodeSource is Page %}
    <p>I'm in a page</p>
{% endif %}
{% if parentNodeSource is BlogPost %}
    <p>I'm in a blog article</p>
{% endif %}

```

You can use real node-type names, like `Page`, or their PHP classname, like `NSPage`.

Generating paths and url

Standard Twig `path` and `url` methods are both working for *static* and *dynamic* routing. In Roadiz, these methods can take either a `string` identifier or a `NodesSources` instance. Of course optional parameters are available for both, they will automatically create an *http query string* when using a node-source.

```

{# Path generation with a Symfony route #}
{# Eg. /fr #}
{{ path('homePageLocale', {'_locale': 'fr'}) }}

{# Path generation with a node-source #}
{# Eg. /en/about-us #}
{{ path(nodeSource) }}

{# Url generation with a node-source #}
{# Eg. http://localhost:8080/en/about-us #}
{{ url(nodeSource) }}

{# Path generation with a node-source and parameters #}
{# Eg. /en/about-us?page=2 #}
{{ path(nodeSource, {'page': 2}) }}

```

Generating assets paths and url

You also can use standard `{{ asset('file.jpg', 'FooBarTheme') }}` to generate a path to a public asset stored in your theme. This will generate `/themes/FooBarTheme/static/file.jpg` path, **do not** add a leading slash to let Symfony package generate path according to request context.

If you need this path to converted to absolute url, use `{{ absolute_url(asset('file.jpg', 'FooBarTheme')) }}`.

`asset` method second argument is the *package* to use for resolving assets. Roadiz automatically registers a package using your theme name.

Note: Make sure you are **not** using a leading slash in your asset paths. If you begin path with a slash, the assets package won't resolve it and it will assume that your path is already absolute.

Handling node-sources with Twig

Most of your front-end work will consist in editing *Twig* templating, *Twig* assignments and... *Twig* filters. Roadiz core entities are already linked together so you don't have to prepare your data before rendering it. Basically, you can access *nodes* or *node-sources* data directly in *Twig* using the “dot” separator.

There is even some magic about *Twig* when accessing private or protected fields: just write the field-name and it will use the getter method instead: `{{ nodeSource.content|markdown }}` will be interpreted as `{{ nodeSource.getContent|markdown }}` by *Twig*.

Note: Roadiz will transform your node-type fields names to *camel-case* to create getters and setters into you NS class. So if you created a `header_image` field, getter will be named `getHeaderImage()`. However, if you called it `headerimage`, getter will be `getHeaderimage()`

You can access methods too! You will certainly need to get node-sources' documents to display them. Instead of declaring each document in your PHP controller before, you can directly use them in *Twig*:

```
{% set images = nodeSource.images %}
{% for image in images %}
    {% set imageMetas = image.documentTranslations.first %}
    <figure>
        {{ image|display({'width':200}) }}
        <figcaption>{{ imageMetas.name }} -- {{ imageMetas.copyright }}</
↪figcaption>
    </figure>
{% endfor %}
```

Use node references

If you added a *node reference* field to your node-source type you will able to grab them directly from the proxy methods. For example, add a `artist_references` field which links some *Artist* nodes to your *Page* node-type. Then you will be able to grab them using:

```
{% set artists = nodeSource.artistReferencesSources %}
{% for artist in artists %}
    <a href="{{ path(artist) }}">{{ artist.title }}</a>
{% endfor %}
```

Note the `Sources` suffix after field getter name. It allows you to directly fetch `NodesSources` objects instead of `Node`.

We encourage you to set only one Node-Type to your node-reference field to optimize *Doctrine* queries.

Loop over node-source children

With Roadiz you will be able to grab each node-source children using custom children Twig filter.

```
{% set childrenBlocks = nodeSource|children %}
{% for childBlock in childrenBlocks %}
<div class="block">
    <h2>{{ childBlock.title }}</h2>
    <div>{{ childBlock.content|markdown }}</div>
</div>
{% endfor %}
```

```
{#
# This statement will only grab *visible* "Page" children node-sources and
# will order them ascendant according to their *title*.
#}
{% set childrenBlocks = nodeSource|children({
    'node.visible': true,
    'node.nodeType': bags.nodeType.get('Page'),
    },
    {'title': 'ASC'}) %}
```

Note: Calling `getChildren()` from a node-source *handler* or `|children` filter will **always** return `NodesSources` objects from the same translation as their parent.

Add previous and next links

In this example, we want to create links to jump to *next* and *previous* pages. We will use node-source handler methods `getPrevious()` and `getNext()` which work the same as `getChildren()` method. `|previous` and `|next` Twig filters are also available.

```
{% set prev = nodeSource|previous %}
{% set next = nodeSource|next %}

{% if (prev or next) %}
<nav class="contextual-menu">
    {% if prev %}
    <a class="previous" href="{{ path(prev) }}"><i class="uk-icon-arrow-left"></i>
    ↩{{ prev.title }}</a>
    {% endif %}
    {% if next %}
    <a class="next" href="{{ path(next) }}">{{ next.title }} <i class="uk-icon-
    ↪arrow-right"></i></a>
    {% endif %}
</nav>
{% endif %}
```

Note: Calling `getPrevious` and `getNext` from a node-source *handler* will **always** return `NodesSources` objects from the same translation as their sibling.

Additional filters

Roadiz's Twig environment implements some useful filters, such as:

- `markdown`: Convert a markdown text to HTML
- `inlineMarkdown`: Convert a markdown text to HTML without parsing *block* elements (useful for just italics and bolds)
- `markdownExtra`: Convert a markdown-extra text to HTML (footnotes, simpler tables, abbreviations)
- `centralTruncate(length, offset, ellipsis)`: Generate an ellipsis at the middle of your text (useful for filenames). You can decenter the ellipsis position using `offset` parameter, and even change your ellipsis character with `ellipsis` parameter.
- `handler`: Get an entity handler using Roadiz *HandlerFactory*.

NodesSources filters

These following Twig filters will only work with `NodesSources` entities... not `Nodes`. Use them with the *pipe* syntax, eg. `nodeSource|next`.

- `children`: shortcut for `NodesSourcesHandler::getChildren()`
- `next`: shortcut for `NodesSourcesHandler::getNext()`
- `previous`: shortcut for `NodesSourcesHandler::getPrevious()`
- `firstSibling`: shortcut for `NodesSourcesHandler::getFirstSibling()`
- `lastSibling`: shortcut for `NodesSourcesHandler::getLastSibling()`
- `parent`: shortcut for `$source->getParent()`
- `parents`: shortcut for `NodesSourcesHandler::getParents(array $options)`
- `tags`: shortcut for `NodesSourcesHandler::getTags()`
- `render(themeName)`: initiate a sub-request for rendering a given block *NodesSources*

Documents filters

These following Twig filters will only work with `Document` entities. Use them with the *pipe* syntax, eg. `document|display`.

- `url`: returns document public URL as *string*. See [document URL options](#).
- `display`: generates an HTML tag to display your document. See [document display options](#).
- `imageRatio`: return image size ratio as *float*.
- `imageSize`: returns image size as *array* with width and height.
- `imageOrientation`: get image orientation as *string*, returns *landscape* or *portrait*.
- `path`: shortcut for document real path on server.
- `exists`: shortcut to test if document file exists on server. Returns *boolean*.
- `embedFinder`: return the embed finder to handle external documents sources such as *Youtube* or *Vimeo*

Translations filters

These following Twig filters will only work with `Translation` entities. Use them with the *pipe* syntax, eg. `translation|menu`.

- menu: shortcut for `TranslationViewer::getTranslationMenuAssignment()`.

This filter returns some useful informations about current page available languages and their urls. See [getTranslationMenuAssignment method definition](#). You do not have to pass it the current request object as the filter will grab it for you. But you can specify if you want *absolute* urls or not.

Standard filters and extensions are also available:

- `{{ path('myRoute') }}`: for generating static routes Url.
- `u.truncate` and `u.wordwrap` which are parts of the [UnicodeString instance](#).
- `format_date`, `format_datetime`, `format_currency`, `format_number`, `country_name` which are parts of the [IntlExtension extension](#).

Create your own Twig filters

Imagine now that your are rendering some dynamic CSS stylesheets with Twig. Your are listing your website projects which all have a distinct color. So you've created a CSS route and a `dynamic-colors.css.twig`.

```
{% for project in projects %}
.{{ project.node.nodeName }} h1 {
    color: {{ project.color }};
}
{% endfor %}
```

This code should output a CSS like that:

```
.my-super-project h1 {
    color: #FF0000;
}
.my-second-project h1 {
    color: #00FF00;
}
```

Then you should see your “super project” title in red on your website. OK, that’s great. But what should I do if I need to use a RGBA color to control the Alpha channel value? For example, I want to set project color to a `<div class="date">` background like this:

```
.my-super-project .date {
    background-color: rgba(255, 0, 0, 0.5);
}
.my-second-project .date {
    background-color: rgba(0, 255, 0, 0.5);
}
```

Great... I already see coming guys complaining that “rgba” is only supported since IE9... We don’t give a shit!...

Hum, hum. So you need a super filter to extract decimal values from our backoffice stored hexadecimal color. Roadiz enables us to extend Twig environment filters thanks to *dependency injection*!

You just have to extend `setupDependencyInjection` static method in your main theme class. Create it if it does not exist yet.

```
// In your SuperThemeApp.php
public static function setupDependencyInjection(\Pimple\Container $container)
{
    parent::setupDependencyInjection($container);

    // We extend twig filters
    $container->extend('twig.filters', function ($filters, $c) {
```

```
// The first filter will extract red value
$red = new \Twig_SimpleFilter('red', function ($hex) {
    if ($hex[0] == '#' && strlen($hex) == 7) {
        return hexdec(substr($hex, 1, 2));
    } else {
        return 0;
    }
});
$filters->add($red);

// The second filter will extract green value
$green = new \Twig_SimpleFilter('green', function ($hex) {
    if ($hex[0] == '#' && strlen($hex) == 7) {
        return hexdec(substr($hex, 3, 2));
    } else {
        return 0;
    }
});
$filters->add($green);

// The third filter will extract blue value
$blue = new \Twig_SimpleFilter('blue', function ($hex) {
    if ($hex[0] == '#' && strlen($hex) == 7) {
        return hexdec(substr($hex, 5, 2));
    } else {
        return 0;
    }
});
$filters->add($blue);

// Then we return our extended filters collection
return $filters;
});
}
```

And... Voilà! You can use red, green and blue filters in your Twig template.

```
{% for project in projects %}
.{{ project.node.nodeName }}.date {
    background-color: rgba({{ project.color|red }}, {{ project.color|green }}, {{
↪project.color|blue }}, 0.5);
}
{% endfor %}
```

Use custom Twig extensions

Just like you did to add your own *Twig* filters, you can add your own *Twig* extensions. Instead of extending `twig.filters` service, just extend `twig.extensions` service.

```
// In your SuperThemeApp.php
public static function setupDependencyInjection(\Pimple\Container $container)
{
    parent::setupDependencyInjection($container);

    // We extend twig extensions
    $container->extend('twig.extensions', function ($extensions, $c) {
        $extensions->add(new MySuperThemeTwigExtension());
        return $extensions;
    });
}
```

Creating a custom *Twig* extension is better if you want to add many new filters, methods and globals at the same time.

Displaying documents

Did you noticed that *images* relation is available directly in *nodeSource* object? That's a little shortcut to `(nodeSource|handler).documentFromFieldName('images')`. Cool, isn't it? When you create your *documents* field in your node-type, Roadiz generate a shortcut method for each document relation in your *GeneratedNodesSources/NSxxxxx* class.

Now, you can use the *DocumentViewer* service to generate HTML view for your documents no matter they are *images*, *videos* or *embed*. Two *Twig* filters are available with *Documents*:

- `|display` generates an HTML tag to display your document.
- `|url` generates a public URL to reach your document.
- `|embedFinder` gets the *EmbedFinder* for current document according to the *embed-platform* type (Youtube, Vimeo, Soundcloud...).

```
{# Grab only first document from "images" field #}
{% set image = nodeSource.images[0] %}

{# Always test if document exists #}
{% if image %}
{{ image|display({
    'width':200,
    'crop':"1:1",
    'quality':75,
    'embed':true
}) }}
{% endif %}
```

HTML output options

- **absolute** (true|false, default: *false*), generates an *absolute* URL with protocol, domain-name and base-url. This must be used for social network images.
- **embed** (true|false, default: *false*), display an embed as *iframe* instead of its thumbnail
- **identifier**
- **class**
- **alt**: If not filled, it will get the document name, then the document filename
- **lazyload** (true|false, default: *false*), fill image *src* in a *data-src* attribute instead of *src* to prevent it from loading. It will add automatically *lazyload_class* class to your HTML image.
- **lazyload_class** (default: *lazyload*) Class name to be added when enabling lazyloading.
- **fallback** (URL|data-uri) Defines a custom fallback image URL or *data-uri* when using *lazyload* option in order to fill *src* attribute and validate against W3C
- **blurredFallback** (false|true, default: *false*) Generated a very low quality image version for lazyload fallback to better control image size and better experience.
- **picture** (false|true, default: *false*), use `<picture>` element instead of *image* and allow serving WebP image to compatibles browsers. **Only use if your server support WebP.**
- **inline** (true|false, default: *true*), **for SVG**, display SVG inline code in html instead of using an `<object>` tag. Default *true*.
- **loading** (auto|lazy|eager|null, default: *null*), for next-gen browser only that will support native lazy-loading. This will be applied only on *img*, *picture* and *iframe* elements. *This can fail W3C validation.*

Images resampling options

- **width**
- **height**
- **crop** (ratio: `{w}:{h}`, for example : `16:9`), defines a ratio for cropping images. **You must combine “crop” option with “width” or “height” option**, otherwise you’ll end with a cyclic dependency to compute output image size. We recommend you to use `fit` option with *final image size* to better control output: `crop` may lose precision on width or height especially on small sizes.
- **fit** (fixed dimensions: `{w}x{h}`, for example : `100x200`), if you are using `fit` option, Roadiz will be able to add `width` and `height` attributes to your `` tag.
- **align**, to use along with `fit` parameter to choose which part of the picture to fit. Allowed options:
 - top-left
 - top
 - top-right
 - left
 - center
 - right
 - bottom-left
 - bottom
 - bottom-right
- **grayscale** (boolean, default: `false`)
- **quality** (1-100, default: `90`)
- **flip** (`h` or `v`), mirror your image vertical or horizontal
- **blur** (1-100, default: `0`) (*can be really slow to process*)
- **sharpen** (1-100, default: `0`)
- **contrast** (1-100, default: `0`)
- **background** (hexadecimal color without `#`)
- **progressive** (boolean, default: `false`), it will interlace the image if it’s a *PNG* file.
- **noProcess** (boolean, default: `false`): Disable image processing, useful if you want to keep animated GIF

Audio / Video options

- **autoplay** (boolean, default: `false`)
- **controls** (boolean, default: `true`)
- **loop** (boolean, default: `false`)
- **muted** (boolean, default: `false`)
- **custom_poster** (string): URL to a image to be used as video poster

For *Soundcloud* embeds

- **hide_related** (boolean, default: `false`)
- **show_comments** (boolean, default: `false`)
- **show_user** (boolean, default: `false`)

- **show_reposts** (boolean, default: `false`)
- **visual** (boolean, default: `false`)

For *Mixcloud* embeds

- **mini** (boolean, default: `false`)
- **light** (boolean, default: `true`)
- **hide_cover** (boolean, default: `true`)
- **hide_artwork** (boolean, default: `false`)

For *Vimeo* embeds

- **displayTitle** (boolean, default: `false`)
- **byline** (boolean, default: `false`)
- **portrait** (boolean, default: `false`)
- **color** (boolean)
- **api** (boolean, default: `true`)
- **automute** (boolean, default: `false`)
- **autoplay** (boolean, default: `false`)

For *Youtube* embeds

- **modestbranding** (boolean, default: `true`)
- **rel** (boolean, default: `false`)
- **showinfo** (boolean, default: `false`)
- **start** (integer, default: `false`)
- **end** (integer, default: `false`)
- **enablejsapi** (boolean, default: `true`)
- **playlist** (boolean, default: `false`)
- **playsinline** (boolean, default: `false`): Allow iframe to play inline on iOS

You can use **multiple source files** for one video document or audio document. Just upload a file using the same filename name but with a different extension. Use this method to add a poster image to your video too. For example: for `my-video.mp4` file, upload `my-video.webm`, `my-video.ogg` and `my-video.jpeg` documents. Roadiz will automatically generate a `<video>` tag using all these files as *source* and *poster* attribute.

Using src-set attribute for responsive images

Roadiz can generate a `srcset` attribute to create a responsive image tag like the one you can find [on these examples](#).

- **srcset** (Array) Define for each rule an Array of format. [Specifications](#)
- **media** (Array) Define one `srcset` for each media-query. You cannot use `media` without picture option.

```
{% set image = nodeSource.images[0] %}
{% if image %}
{{ image|display({
    'fit': '600x600',
    'quality': 75,
    'srcset': [
        {
            'format': {
```

```
        'fit': '200x200',
        'quality': 90
    },
    'rule': '780w',
},
{
    'format': {
        'fit': '600x600',
        'quality': 75
    },
    'rule': '1200w',
}
],
'sizes': [
    '(max-width: 780px) 200px',
    '(max-width: 1200px) 600px',
],
}) }}
{% endif %}
```

This will output an `img` tag like the following one:

```

```

Generate <picture> elements

If you want to combine `srcset` for media queries **and** device ratio, use `picture` element with `media` option:

```
{% set image = nodeSource.images[0] %}
{% if image %}
{{ image|display({
    'fit': '640x400',
    'quality': 75,
    'picture': true,
    'media': [
        {
            'srcset': [
                {
                    'format': {
                        'fit': '320x200',
                        'quality': 90
                    },
                    'rule': '1x',
                },
                {
                    'format': {
                        'fit': '640x400',
                        'quality': 75
                    },
                    'rule': '2x',
                }
            ],
            'rule': '(max-width: 767px)'
        },
    ],
})
}}
```



```

        'srcset': [
            {
                'format': {
                    'fit': '800x600',
                    'quality': 80
                },
                'rule': '1x',
            },
            {
                'format': {
                    'fit': '1600x1200',
                    'quality': 70
                },
                'rule': '2x',
            }
        ],
        'rule': '(min-width: 768px)'
    }
]
}) }}
{% endif %}

```

This will output a picture element supporting :

- *WebP* image format (Roadiz will automatically generate a .webp image if your PHP is compiled with *webp* support)
- *Media query* attributes
- *Device ratio* src-set rules
- A fallback `img` element for older browsers

```

<picture>
  <source media="(max-width: 767px)"
    srcset="/assets/f320x200-q90/folder/file.jpg.webp 1x, /assets/f640x400-
↪q75/folder/file.jpg.webp 2x"
    type="image/webp">
  <source media="(max-width: 767px)"
    srcset="/assets/f320x200-q90/folder/file.jpg 1x, /assets/f640x400-q75/
↪folder/file.jpg 2x"
    type="image/jpeg">

  <source media="(min-width: 768px)"
    srcset="/assets/f800x600-q80/folder/file.jpg.webp 1x, /assets/
↪f1600x1200-q70/folder/file.jpg.webp 2x"
    type="image/webp">
  <source media="(min-width: 768px)"
    srcset="/assets/f800x600-q80/folder/file.jpg 1x, /assets/f1600x1200-
↪q70/folder/file.jpg 2x"
    type="image/jpeg">

  
</picture>

```

More document details

You can find more details in [our API documentation](#).

- If document is an **image**: `getDocumentByArray` method will generate an `` tag with a `src` and `alt` attributes.
- If it's a **video**, it will generate a `<video />` tag with as many sources as available in your document database. Roadiz will look for same filename with each HTML5 video extensions (filename.mp4, filename.ogv, filename.webm).
- Then if document is an external media **and** if you set the `embed` flag to `true`, it will generate an `iframe` according to its platform implementation (*Youtube*, *Vimeo*, *Soundcloud*).
- Get the external document URI (the one used for creating `iframe` for example) with `(document|embedFinder).source(options...)` twig command.

Displaying document metas

Documents can have *name*, *description* and *copyright* (which can be translated), just access them using `documentTranslations` multiple relation (`documentTranslations.first` should always contain current context' translation):

```
{% for document in nodeSource.documents %}
    <div class="document-item">
        {{ document|display }}

        {% set metas = document.documentTranslations.first %}
        <h3 class="document-item-name">{{ metas.name }}</h3>
        <div class="document-item-description">{{ metas.description|markdown }}</div>
    </div>
    <em class="document-item-copyright">{{ metas.copyright }}</em>
</div>
{% endfor %}
```

Displaying document thumbnails

Embed and non-HTML documents will not display automatically their thumbnails, even if they got one. Native videos and audios will always try to display `<video>` or `<audio>` elements, so if you need to force display their thumbnail image you'll need to write it manually:

```
{% for document in nodeSource.documents %}
    <div class="document-item">
        {% if document.hasThumbnails %}
            {{ document.thumbnails[0]|display }}
        {% else %}
            {{ document|display({
                'controls': true,
                'autoplay': false
            }) }}
        {% endif %}
    </div>
{% endfor %}
```

Non-viewable document types, such as *PDF*, *Word*, *Excel*, *Archives*..., will always use their thumbnail image, if there is one, when you call `{{ document|display }}`.

Manage global documents

You can store documents inside *settings* for global images such as header images or website logo. Simply create a new *setting* in Roadiz back-office choosing *Document* type, then a file selector will appear in settings list to upload your picture.

To use this document setting in your theme, you can assign it globally in your `MyThemeApp::extendAssignment` method. Use `getDocument` method instead of `get` to fetch a `Document` object that you'll be able to display in your Twig templates:

```
$document = $this->get('settingsBag')->getDocument('site_logo');
```

Or in a Twig template:

```
<figure id="site-logo">{{ bags.settings.getDocument('site_logo')|display }}</figure>
```

This way is the easiest to fetch a global document, but it needs you to upload it once in *Settings* section. If this does not suit you, you can always fetch a *Document* manually using its *Doctrine* repository and a hard-coded filename.

```
$this->assignment['head']['site_logo'] = $this->get('em')->getRepository(Document::class)->findOneByFilename('logo.svg');
```

Extending your Twig assignment

For a simple website theme, base assignment will work for almost every cases. Using `node` or `nodeSource` data from your Twig template, you will be able to render all your page fields.

Now imagine you need to load data from another node than the one being requested. Or imagine that you want to create a complex homepage which displays a summary of your latest news. You will need to extend existing assigned variables.

For example, create a simple node-type called *Page*. Add several basic fields inside it such as *content* and *images*. If you well-understood [how to create a theme](#) section you will create a *PageController.php* which look like this:

```
<?php
namespace Themes\MyTheme\Controllers;

use Themes\MyTheme\MyThemeApp;
use RZ\Roadiz\Core\Entities\Node;
use RZ\Roadiz\Core\Entities\Translation;
use Symfony\Component\HttpFoundation\Request;

/**
 * Frontend controller to handle Page node-type request.
 */
class PageController extends MyThemeApp
{
    /**
     * Default action for any Page node.
     *
     * @param Symfony\Component\HttpFoundation\Request $request
     * @param RZ\Roadiz\Core\Entities\Node $node
     * @param RZ\Roadiz\Core\Entities\Translation $translation
     *
     * @return Symfony\Component\HttpFoundation\Response
     */
    public function indexAction(
        Request $request,
        Node $node = null,
        Translation $translation = null
    ) {
        $this->prepareThemeAssignment($node, $translation);

        return $this->render('types/page.html.twig', $this->assignment);
    }
}
```

You will be able to render your page using `themes/MyTheme/Resources/views/types/page.html.twig` template file:

```
{% extends '@MyTheme/base.html.twig' %}

{% block content %}

<h1>{{ nodeSource.title }}</h1>
<div class="content">{{ nodeSource.content|markdown }}</div>
<div class="images">
    {% for image in nodeSource.images %}
        <figure>
            {{ image|display }}
        </figure>
    {% endfor %}
</div>
{% endblock %}
```

Use theme-wide assignation

Custom assignations are great but what can I do if I have to use the same variables in several controllers? We added a special `extendAssignment` method which is called at the end of your theme preparation process (`prepareThemeAssignment` and `prepareNodeSourceAssignment`). Just override it in your `MyThemeApp` main class, then every theme controllers and templates will be able to use these variables.

For example, you can use this method to make `<head>` variables available for each of your website pages.

```
/**
 * {@inheritdoc}
 */
protected function extendAssignment()
{
    parent::extendAssignment();

    $this->assignment['head']['facebookUrl'] = $this->get('settingsBag')->get(
        'facebook_url');
    $this->assignment['head']['facebookClientId'] = $this->get('settingsBag')->
        get('facebook_client_id');
    $this->assignment['head']['instagramUrl'] = $this->get('settingsBag')->get(
        'instagram_url');
    $this->assignment['head']['twitterUrl'] = $this->get('settingsBag')->get(
        'twitter_url');
    $this->assignment['head']['googleplusUrl'] = $this->get('settingsBag')->get(
        'googleplus_url');
    $this->assignment['head']['googleClientId'] = $this->get('settingsBag')->get(
        'google_client_id');
    $this->assignment['head']['maps_style'] = $this->get('settingsBag')->get(
        'maps_style');
    $this->assignment['head']['themeName'] = static::$themeName;
    $this->assignment['head']['themeVersion'] = static::VERSION;
}
```

Use Page / Block data pattern

At REZO ZERO, we often use complex page design which need removable and movable parts. At first we used to create long node-types with a lot of fields, and when editors needed to move content to an other position, they had to cut and paste text to another field. It was long and not very sexy.

So we thought about a modular way to build pages. We decided to use one master node-type and several slave node-types instead of a single big type. Here is what we call **Page/Block pattern**.

This pattern takes advantage of Roadiz node hierarchy. We create a very light *Page* node-type, with an *excerpt* and a *thumbnail* fields, then we create an other node-type that we will call *BasicBlock*. This block node-type will have a *content* and *image* fields.

The magic comes when we add a last field into *Page* master node-type called *children_nodes*. This special field will display a node-tree inside your edit page. In this field parameter, we add *BasicBlock* name as a default value to tell Roadiz that each *Page* nodes will be able to contain *BasicBlock* nodes.

So you understood that all your page data will be allocated in several *BasicBlock* nodes. Then your editor will just have to change block order to re-arrange your page content. That's not all! With this pattern you can join images to each block so that each paragraph can be pictured with a *Document* field. No need to insert image tags right into your Markdown text as you would do in a Wordpress article.

How to template *Page / Block* pattern

Now that you've structured your data with a *Page* node-type and a *BasicBlock*, how do render your data in only one page and only one URL request? We will use custom assignments!

You can directly assign your children blocks at the beginning of your *Twig* template. Make sure the global *bags* service is available and reachable.

```
{# Fetch only BasicBlock nodes inside #}
{% set blocks = nodeSource|children({
    node.nodeType : bags.nodeTypes.get('BasicBlock'),
}) %}

{# Fetch ALL non-reachable nodes inside #}
{% set blocks = nodeSource|children({
    node.nodeType.reachable : false,
}) %}
```

Note: You can use different *block* types in the same *page*. Just create as many node-types as you need and add their name to your *Page* *children_node* default values. Then add each node-type into *children* criteria using an array instead of a single value: `node.nodeType : [bags.nodeTypes.get('BasicBlock'), bags.nodeTypes.get('AnotherBlock')]`. That way, you will be able to create awesome pages with different looks but with the same template (basic blocks, gallery blocks, etc).

Now we can update your `types/page.html.twig` template to use your assigned blocks.

```
{% if blocks %}
<section class="page-blocks">
{% for pageBlock in blocks %}
    {% include '@MyTheme/blocks/' ~ pageBlock.nodeType|u.snake ~ '.html.twig' %}
    ↳with {
        'nodeSource': pageBlock,
        'parentNodeSource': nodeSource,
        'themeServices': themeServices,
        'bags': bags,
        'head': head,
        'node': pageBlock.node,
        'nodeType': pageBlock.node.nodeType,
        'loop': loop,
        'blocksLength': blocks|length
    } only %}
{% endfor %}
</section>
{% endif %}
```

Whaaat? What is that include? This trick will save you a lot of time! We ask Twig to include a sub-template according to each block type name. Eg. for a *BasicBlock* node, Twig will include a `blocks/basicblock.html.twig` file. It's even more powerful when you are using multiple block types because Twig will automatically choose the right template to render each part of your page.

Then create each of your blocks templates files in `blocks` folder:

```
{# This is file: blocks/basicblock.html.twig #}

<div class="basicblock {% if loop.index0 is even %}even{% else %}odd{% endif %}">
  {#
    # Did you notice that 'pageBlock' became 'nodeSource' as
    # we passed it during include for a better compatibility
  #}
  <h3>{{ nodeSource.title }}</h3>
  <div class="content">{{ nodeSource.content|markdown }}</div>

  <div class="images">
    {% for image in nodeSource.images %}
      <figure>
        {{ image|display({'width':200}) }}
      </figure>
    {% endfor %}
  </div>
</div>
```

Voilà! This is the simplest example to demonstrate you the power of *Page / Block* pattern. If you managed to reproduce this example you can now try it using multiple *block* node-types, combining multiple sub-templates.

Use a TreeWalker to control your node hierarchy

Page/Block pattern is really powerful and is the foundation for almost every Rezo Zero websites. But this approach can lead to performance issues if developers do not specify each available node-types for each child. Thus, we wanted to remove this ORM logic from your Twig templates, in order to comply with MVC pattern, but more important, in order to expose node hierarchy into a REST JSON API.

Rezo Zero developed a [third-party library](#): `rezozero/tree-walker` which aims to abstract node hierarchy from the context and the CMS where it is used.

```
composer require rezozero/tree-walker
```

A `TreeWalker` is a traversable object you will be able to loop on in your Twig template, but also to serialize into a JSON object. This `TreeWalker` object can be configured with *definitions* in order to fetch next-level objects from your *database*, your CMS, or even an external API. That way you instantiate a new `TreeWalker` with a *root* object and by simply traversing it, it will trigger a fetch operation (`getChildren`) which will look for the right definition for the *root* object class. Then “tree walking” operation goes on for each of your *root* object children until your definitions list is empty or when you reached the max-level limit.

Here is an example of what the *Page/Block* pattern looks like using a *block tree-walker*:

```
{% if blockWalker %}
  <div class="page-blocks">
    {% for subWalker in blockWalker %}
      {% include '@MyTheme/blocks/' ~ subWalker.item.nodeType|u.snake ~
      ↪ '.html.twig' ignore missing with {
        'nodeSource': subWalker.item,
        'parentNodeSource': nodeSource,
        'themeServices': themeServices,
        'head': head,
        'node': subWalker.item.node,
        'nodeType': subWalker.item.node.nodeType,
        'loop': loop,
      %}
```

```

        'blockWalker': subWalker,
        'blocksLength': blockWalker|length
    } only %}
{% endfor %}
</div>
{% endif %}

```

Frontend developers do not need to know how to fetch children blocks anymore, they just need to loop over the *tree-walker* at each template level.

Use block rendering

A few times, using *Page / Block* pattern won't be enough to display your page blocks. For example, you will occasionally need to create a form inside a block, or you will need to process some data before using them in your Twig template.

For this we added a `render` filter which basically create a sub-request to render your block. This new request make possible to create a dedicated Controller for your block.

Let's take the previous example about a page with several *basic blocks* inside. Imagine you have a new *contact block* to insert in your page, then how would you create your form? The following code shows how to “embed” a sub-request inside your block template.

```

{#
# This is file: blocks/contactblock.html.twig
#}
<div class="contactblock {% if loop.index0 is even %}even{% else %}odd{% endif %}">

    <h3>{{ nodeSource.title }}</h3>
    <div class="content">{{ nodeSource.content|markdown }}</div>

    {#
    # We created a display_form node-type field to enable/disable form
    # but this is optional
    #}
    {% if nodeSource.displayForm %}
        {#
        # "render" twig filter initiate a new Roadiz request
        # using *nodeSource* as primary content. It takes one
        # argument to locate your block controller
        #}
        {{ nodeSource|render('MyTheme') }}
    {% endif %}
</div>

```

Then Roadiz will look for a `Themes\MyTheme\Controllers\Blocks>ContactBlockController.php` file and a `blockAction` method inside.

```

namespace Themes\MyTheme\Controllers\Blocks;

use RZ\Roadiz\Core\Entities\NodesSources;
use RZ\Roadiz\Core\Exceptions\FforceResponseException;
use Symfony\Component\HttpFoundation\Request;
use Themes\MyTheme\MyThemeApp;

class ContactBlockController extends MyThemeApp
{
    function blockAction(Request $request, NodesSources $source, $assigment)
    {
        $this->prepareNodeSourceAssigment($source, $source->getTranslation());
    }
}

```

```
$this->assignation = array_merge($this->assignation, $assignation);

// If you assignate session messages here, do not assignate it in your
// MyThemeApp::extendAssignation() method before.
$this->assignation['session']['messages'] = $this->get('session')->
↳getFlashBag()->all();

/*
 * Add your form code here, for example
 */
$form = $this->createFormBuilder()->add('name', 'text')
    ->add('send_name', 'submit')
    ->getForm();

$form->handleRequest($request);
if ($form->isValid()) {
    // some stuff
    throw new ForceResponseException($this->redirect($request->getUri()));
}

$this->assignation['contactForm'] = $form->createView();

return $this->render('form-blocks/contactblock.html.twig', $this->
↳assignation);
}
```

Then create your template `form-blocks/contactblock.html.twig`:

```
<div class="contact-form">
    {% for messages in session.messages %}
        {% for message in messages %}
            <p class="alert alert-success">{{ message }}</p>
        {% endfor %}
    {% endfor %}

    {{ form(contactForm) }}
</div>
```

Use controller rendering

Roadiz implements the standard *Symfony* fragment rendering too. Use `render()` Twig function with `controller()` function to initiate a Roadiz sub-request and embed complex contents into your templates.

```
{# views/base.html.twig #}

{# ... #}
<div id="sidebar">
    {{ render(controller(
        'Themes\\MyTheme\\Controllers\\ArticleController::recentArticlesAction',
        { 'max': 3 }
    )) }}
</div>
```

Then use regular Roadiz controllers and actions to handle your sub-request:

```
// themes/MyTheme/Controllers/ArticleController.php
namespace Themes\\MyTheme\\Controllers;

// ...

class ArticleController extends MyThemeApp
```



```

{
    public function recentArticlesAction(Request $request, $max = 3, $_locale = 'en
    ↪')
    {
        $translation = $this->bindLocaleFromRoute($request, $_locale);
        $this->prepareThemeAssignment(null, $translation);

        // make a database call or other logic
        // to get the "$max" most recent articles
        $articles = ...;

        return $this->render(
            'article/recent_list.html.twig',
            ['articles' => $articles]
        );
    }
}

```

See https://symfony.com/doc/current/templating/embedding_controllers.html for more details about *Symfony* render extension.

Paginate entities using EntityListManager

Roadiz implements a powerful tool to display lists and paginate them. Each Controller class allows developer to use `createEntityListManager` method.

In `FrontendController` inheriting classes, such as your theme ones, this method is overridden to automatically use the current `authorizationChecker` to filter entities by status when entities are *nodes*.

`createEntityListManager` method takes 3 arguments:

- **Entity classname**, i.e. `RZ\Roadiz\Core\Entities\Nodes` or `GeneratedNodeSources\NSArticle`. The great thing is that you can use it on a precise `NodesSources` class instead of using *Nodes* or *NodesSources* then filtering on *node-type*. Using a *NS* entity allows you to filter on your own custom fields too.
- **Criteria array**, (optional)
- **Ordering array**, (optional)

EntityListManager will automatically grab the current page looking for your Request parameters. If `?page=2` is set or `?search=foo`, it will use them to filter your list and choose the right page.

If you want to handle pagination manually, you always can set it with `setPage(page)` method, which must be called **after** handling *EntityListManager*. It is useful to bind page parameter in your *routing* configuration.

```

projectPage:
    path: /articles/{page}
    defaults:
        _controller: ↪
        ↪Themes\MyAwesomeTheme\Controllers\ArticleController::listAction
        page: 1
    requirements:
        page: "[0-9]+"

```

Then, build your `listAction` method.

```

public function listAction(
    Request $request,
    $page,
    $_locale = 'en'
) {
    $translation = $this->bindLocaleFromRoute($request, $_locale);

```

```

$this->prepareThemeAssignment(null, $translation);

$listManager = $this->createEntityListManager(
    NSArticle::class,
    ['sticky' => false], //sticky is a custom field from Article node-type
    ['node.createdAt' => 'DESC']
);
/*
 * First, set item per page
 */
$listManager->setItemPerPage(20);
/*
 * Second, handle the manager
 */
$listManager->handle();
/*
 * Third, set current page manually
 * AFTER handling entityListManager
 */
if ($page > 1) {
    $listManager->setPage($page);
}

$this->assignment['articles'] = $listManager->getEntities();
$this->assignment['filters'] = $listManager->getAssignment();

return $this->render('types/articles-feed.html.twig', $this->assignment);
}

```

Then create your `articles-feed.html.twig` template to display each entity paginated.

```

{# Listing #}
<ul class="article-list">
    {% for article in articles %}
        <li class="article-item">
            <a class="article-link" href="{{ path(article) }}">
                <h2>{{ article.title }}</h2>
            </a>
        </li>
    {% endfor %}
</ul>

{# Pagination #}
{% if filters.pageCount > 1 %}
    <nav class="pagination">
        {% if filters.currentPage > 1 %}
            <a class="prev-link" href="{{ path('projectPage', {page: filters.
→currentPage - 1}) }}">
                {% trans %}prev.page{% endtrans %}
            </a>
        {% endif %}
        {% if filters.currentPage < filters.pageCount %}
            <a class="next-link" href="{{ path('projectPage', {page: filters.
→currentPage + 1}) }}">
                {% trans %}next.page{% endtrans %}
            </a>
        {% endif %}
    </nav>
{% endif %}

```

Alter your Roadiz queries with events

The `FilterQueryBuilderEvent` can be used when *EntityListManager* criteria or *API* services won't offer enough parameters to select your entities. This event will be dispatched when just before *Doctrine* QueryBuilder will execute the DQL query so that you can add more DQL statements. This can be very powerful if you need, for example, to force an `INNER JOIN` or to use complexe DQL commands.

```
// Prepare a Closure listener to filter every NodesSources
// which are not called "About"
$callable = function(FilterQueryBuilderEvent $event) {
    // Specify the repository on which your filter will be applied
    // Try to be the more precise you can

    // This will be applied to all nodes-sources (greedy)
    if ($event->supports(NodesSources::class)) {
        $qb = $event->getQueryBuilder();
        $qb->andWhere($qb->expr()->neq($qb->expr()->lower('ns.title'), ':neq'));
        $qb->setParameter('neq', 'about');
    }
    // This will be applied only on your Page nodes-sources (safer)
    if ($event->supports(NSPage::class)) {
        $qb = $event->getQueryBuilder();
        $qb->andWhere($qb->expr()->neq($qb->expr()->lower('ns.title'), ':neq'));
        $qb->setParameter('neq', 'about');
    }
};

// Register your listener in Roadiz event dispatcher
/** @var EventDispatcher $eventDispatcher */
$eventDispatcher = $this->get('dispatcher');
$eventDispatcher->addListener(
    QueryBuilderEvents::QUERY_BUILDER_SELECT,
    $callable
);

// Do some queries or use Roadiz EntityListManager

// Do not forget to remove your listener not to alter EVERY
// queries on NodesSources in your following code.
$eventDispatcher->removeListener(
    QueryBuilderEvents::QUERY_BUILDER_SELECT,
    $callable
);
```

Warning: QueryBuilder events are a powerful tool to alter **all Roadiz entities pipeline**. Make sure to remove your listener from the dispatcher **before rendering your Twig templates** or to only support the `entityClass` you need. This could alter every queries such as `|children` Twig filters or your main navigation loop.

Add a firewall in your theme

You may need to add a secured area in your website or application, even for none-backend users. Roadiz uses *Symfony* security components to handle firewalled requests. You will be able to extend the *firewall map* in your Theme `addDefaultFirewallEntry` method.

Before create your firewall map entry, you must understand that Roadiz already has 2 firewall areas:

- `^/rz-admin` area, which naturally matches every back-office sections

- `^/` area which is required for previewing unpublished node and get user information across the whole website

The last firewall request matcher can be tricky to deal with, especially if you want to add another secured area as it *listen* to every requests. When you'll add new firewall map entry, you may call `parent::addDefaultFirewallEntry($container)`; **before** your custom configuration to be sure that `^/` request matcher has **the lowest priority**. However, if you want to override `^/` request matcher configuration you have to omit the parent method call.

```
/**
 * {@inheritdoc}
 */
public static function addDefaultFirewallEntry(Container $container)
{
    /*
     * Your custom firewall map entry configuration
     * goes here
     */

    /*
     * Call parent ONLY if you don't want to create
     * a firewall map at website root level. And call it after
     * your own firewall entry.
     */
    parent::addDefaultFirewallEntry($container);
}
```

Configuring a non-root firewall map entry with FirewallEntry class

Before copy and pasting the following lines, think about it a little time... A firewall map entry defines several mandatory routes:

- A *base path* for your firewall to be triggered
- A *login path*, which **can** be **outside** or **inside** of your firewall map
- A *login_check path*, which **must** be **inside** of your firewall map
- A *logout path*, which **must** be **inside** of your firewall map
- A new role describing your secured area purpose (i.e. `ROLE_ACCESS_PRESS` for a private press kit area), you should create this role in Roadiz backoffice before.

If this example I will use:

- `/press` as my base path for secured area
- `/signin` for my login page, notice that it's not in my firewall
- `/press/login_check`
- `/press/logout`
- `ROLE_ACCESS_PRESS`

Here is the code to add in your theme' `addDefaultFirewallEntry` method. Do not forget to add the matching *use* statement in your file header.

```
use RZ\Roadiz\Utils\Security\FirewallEntry;
use Pimple\Container;

/**
 * {@inheritdoc}
 */
public static function addDefaultFirewallEntry(Container $container)
```

```

{
    /*
     * Call parent ONLY if you don't want to create
     * a firewall map at website root level.
     */
    parent::addDefaultFirewallEntry($container);

    $firewallBasePattern = '^/press';
    $firewallBasePath = '/press';
    $firewallLogin = '/signin';
    $firewallLogout = '/press/logout';
    $firewallLoginCheck = '/press/login_check';
    $firewallBaseRole = 'ROLE_ACCESS_PRESS';

    $firewallEntry = new FirewallEntry(
        $container,
        $firewallBasePattern,
        $firewallBasePath,
        $firewallLogin,
        $firewallLogout,
        $firewallLoginCheck,
        $firewallBaseRole
        // You can add a special AuthenticationSuccessHandler
        // if you need to do some stuff for your theme at visitor login
        //'Themes\YourTheme\Authentication\AuthenticationSuccessHandler'
    );
    // Allow anonymous authentication
    $firewallEntry->withAnonymousAuthenticationListener();
    // Allow switch user feature
    $firewallEntry->withSwitchUserListener();

    /*
     * Finally add this entry to the Roadiz
     * firewall map.
     */
    $container['firewallMap']->add(
        $firewallEntry->getRequestMatcher(),
        $firewallEntry->getListeners(),
        $firewallEntry->getExceptionListener()
    );
}

```

Add login routes

After configuring your Firewall, you'll need to add your routes to your theme `routes.yml` file. *Logout* and *login_check* won't need any controller setup as they will be handled directly by Roadiz firewall event dispatcher. The only one you need to handle is the *login* page.

```

themeLogout:
    path:      /press/logout
themeLoginCheck:
    path:      /press/login_check
themeLoginPage:
    path:      /signin
    defaults:
        _controller: Themes\MySuperTheme\Controllers\LoginController::loginAction

```

Warning: If your **login** route is *inside* your firewall **and** your access map require an other role than `IS_AUTHENTICATED_ANONYMOUSLY` you must add a special access map entry to enable your public visi-

tor to access your login page.

```
$this->container['accessMap']->add(new RequestMatcher('^/press/signin'),
['IS_AUTHENTICATED_ANONYMOUSLY']);
```

Add this line with your login page pattern **before** adding your firewall entry. Access map entries order is important!

In your LoginController, just add error handling from the securityAuthenticationUtils service to display a feedback on your login form:

```
/**
 * {@inheritdoc}
 */
public function loginAction(
    Request $request,
    $_locale = 'en'
) {
    $translation = $this->bindLocaleFromRoute($request, $_locale);
    $this->prepareThemeAssignment(null, $translation);
    $helper = $this->get('securityAuthenticationUtils');
    $this->assignment['last_username'] = $helper->getLastUsername();
    $this->assignment['error'] = $helper->getLastAuthenticationError();

    return $this->render('press/login.html.twig', $this->assignment);
}
```

Then, you can create your *login* form as you want. Just use the required fields:

- `_username`
- `_password`

And do not forget to set your form *action* to `{{ path('themeLoginCheck') }}` and to use *POST* method.

```
{% if error %}
    <div class="alert alert-danger"><i class="fa fa-warning"></i> {{ error.
↪message|trans }}</div>
{% endif %}
<form id="login-form" class="form" action="{{ path('themeLoginCheck') }}" method=
↪"post">
    <div class="form-group">
        <label class="control-label" for="_username">{{ trans }}username{%_
↪endtrans %}</label>
        <input class="form-control" type="text" name="_username" id="_username"
↪placeholder="{{ trans }}username{% endtrans %}" value="" />
    </div>
    <div class="form-group">
        <label class="control-label" for="_password">{{ trans }}password{%_
↪endtrans %}</label>
        <input class="form-control" type="password" name="_password" id="_password"
↪placeholder="{{ trans }}password{% endtrans %}" value="" />
    </div>
    <div class="form-group">
        <label class="control-label" for="_remember_me">{{ trans }}keep_me_logged_
↪in{% endtrans %}</label>
        <input class="form-control" type="checkbox" name="_remember_me" id="_
↪remember_me" value="1" />
    </div>
    <div class="form-group">
        <button class="btn btn-primary" type="submit"><i class="fa fa-signin"></i>
↪{{ trans }}login{% endtrans %}</button>
    </div>
```

```
</form>
```

Configuring a root firewall map entry with FirewallEntry class

You may want to offer authentication for every pages of your website and manage access control manually within your node-type controllers. In that case you need to override default front-end Firewall map entry with your own and defined login/logout paths.

```
use RZ\Roadiz\Utils\Security\FirewallEntry;
use Pimple\Container;

/**
 * {@inheritdoc}
 */
public static function addDefaultFirewallEntry(Container $container)
{
    /**
     * Do not call parent method
     */

    $firewallBasePattern = '^/';
    $firewallBasePath = '/';
    $firewallLogin = '/accounts';
    $firewallLogout = '/accounts/logout';
    $firewallLoginCheck = '/accounts/login_check';

    /**
     * You MUST use IS_AUTHENTICATED_ANONYMOUSLY base role not to prevent
     * users to access your website
     */
    $firewallBaseRole = 'IS_AUTHENTICATED_ANONYMOUSLY';

    $firewallEntry = new FirewallEntry(
        $container,
        $firewallBasePattern,
        $firewallBasePath,
        $firewallLogin,
        $firewallLogout,
        $firewallLoginCheck,
        $firewallBaseRole
    );
    // Allow anonymous authentication
    $firewallEntry->withAnonymousAuthenticationListener()
        ->withSwitchUserListener()
        // Automatically redirect to themeLoginPage route
        // if AccessDeniedException is thrown
        ->withAccessDeniedHandler('themeLoginPage')
        ->withReferer();

    /**
     * Finally add this entry to the Roadiz
     * firewall map.
     */
    $container['firewallMap']->add(
        $firewallEntry->getRequestMatcher(),
        $firewallEntry->getListeners(),
        $firewallEntry->getExceptionHandler()
    );
}
```

For the moment, every pages of your website will be public. You'll need to use `is_granted` Twig filter and

`$this->denyAccessUnlessGranted($role)` method to manage access control to your contents.

Multi-theme website

If your website has more than one theme you must disable firewall entries on every non-main theme app class not to register duplicated firewall entries with the same access-map rules.

For example, if you registered a `MainTheme` and a `SecondaryTheme`, add the following lines to your `themes/SecondaryTheme/SecondaryThemeApp.php` class:

```
/**
 * {@inheritdoc}
 */
public static function addDefaultFirewallEntry(Container $container)
{
    /**
     * Do not register any firewall entry
     */
}
```

Sending emails from your website

`emailManager` factory service is available to send emails from your application. It's already configured to use simple CSS styles and you can use an HTML and plain-text templates.

```
$request = $this->get('request');
$receiver = 'dest@test.com';
$origin = $this->get('settingsBag')->get('email_sender');

$emailManager = $this->get('emailManager');
$title = $this->getTranslator()->trans('hello_world');
$emailManager->setEmailTitle($title);
$emailManager->setSubject($title);
$emailManager->setReceiver($receiver);
$emailManager->setOrigin($origin);

$emailManager->setAssigation([
    'content' => 'Bla bla bla',
    'title' => $title,
    'site' => $this->get('settingsBag')->get('site_name'),
    'disclaimer' => 'You are receiving this email because you rocks!',
]);
$emailManager->setEmailTemplate('@MySuperTheme/emails/email.html.twig');
$emailManager->setEmailPlainTextTemplate('@MySuperTheme/emails/email.txt.twig');
$emailManager->send();
```

Assigation works the same way as HTML template for your website, you must assign every content and informations you'll need to print in your emails.

Note: Be careful, every image path or links **must be** an absolute URL, not a path as your receivers won't be able to resolve your full domain name. Make sure you are using `url()` instead of `path()` for links and wrap with `absolute_url()` method your static assets (like in the example before).

Your `emails/email.html.twig` template should inherits from Roadiz `base_email.html.twig` template.

```
{% extends 'base_email.html.twig' %}

{% block title %}<title>{{ title }}</title>{% endblock %}
```



```
{% block content_table %}
    <table width="100%" cellpadding="0" cellspacing="0">
        <tr>
            <td class="content-block">
                <h1>{{ title }}</h1>
            </td>
        </tr>
        <tr>
            <td class="content-block">{{ content|markdown }}</td>
        </tr>
    </table>
{% endblock %}
```

Your *emails/email.txt.twig* template should inherits from Roadiz *base_email.txt.twig* template.

```
{% extends 'base_email.txt.twig' %}

{% block title %}{{ title }}{% endblock %}
{% block content_table %}{{ content|markdown|strip_tags }}{% endblock %}
```

3.1.7 Forms

Roadiz uses *Symfony* forms logic and API. However, we made ready-made contact and custom forms builders to ease up your development and even make form-building available for your website editors.

Building contact forms

With Roadiz you can easily create simple contact forms with *ContactFormManager* class. Your controller has a convenient shortcut to create this manager with *\$this->createContactFormManager()* method.

If you want to add your own fields, you can use the manager' form-builder with *\$contactFormManager->getFormBuilder();*. Then add your field using standard *Symfony* form syntax. Do not forget to use *Constraints* to handle errors.

One contact-form for one action

Here is an example to create your contact form in your controller action.

```
1 use Symfony\Component\Validator\Constraints\File;
2 use Symfony\Component\Form\Extension\Core\Type\CheckboxType;
3 use Symfony\Component\Form\Extension\Core\Type\FileType;
4 use Symfony\Component\Form\Extension\Core\Type\SubmitType;
5
6 // ...
7 // Create contact-form manager and add 3 default fields.
8 $contactFormManager = $this->createContactFormManager()
9     ->withDefaultFields();
10
11 /*
12  * (Optional) Add custom fields...
13  */
14 $formBuilder = $contactFormManager->getFormBuilder();
15 $formBuilder->add('callMeBack', CheckboxType::class, [
16     'label' => 'call.me.back',
17     'required' => false,
18 ])
19 ->add('document', FileType::class, [
20     'label' => 'document',
21     'required' => false,
```

```
21         'constraints' => [  
22             new File([  
23                 'maxSize' => $contactFormManager->getMaxFileSize(),  
24                 'mimeTypes' => $contactFormManager->getAllowedMimeTypes(),  
25             ]),  
26         ]  
27     ])  
28     ->add('send', SubmitType::class, [  
29         'label' => 'send.contact.form',  
30     ]);  
31  
32     /*  
33      * This is the most important point. handle method will perform form  
34      * validation and send email.  
35      *  
36      * Handle method should return a Response object if everything is OK.  
37     */  
38     if (null !== $response = $contactFormManager->handle()) {  
39         return $response;  
40     }  
41  
42     $form = $contactFormManager->getForm();  
43  
44     // Assignate your form view to display it in Twig.  
45     $this->assignation['contactForm'] = $form->createView();
```

In this example, we used `withDefaultFields` method which add automatically email, name and message fields with right validation constraints. This method is optional and you can add any field you want manually, just keep in mind that you should always ask for an email.

Then in your contact page Twig template:

```
1  {#  
2  # Display contact errors  
3  #}  
4  {% for label, messages in app.flashes(['warning', 'error']) %}  
5      {% for message in messages %}  
6          <p class="alert alert-{{ label }}">  
7              {{- message -}}  
8          </p>  
9      {% endfor %}  
10 {% endfor %}  
11 {#  
12 # Display contact form  
13 #}  
14 {% form_theme contactForm '@MyTheme/forms.html.twig' %}  
15 {{ form(contactForm) }}
```

Using contact-form in *block* controllers

If you want to use *contact-forms* in blocks instead of a full page, you will need to make your redirection response **bubble** through Twig render. The only way to stop Twig is to **throw an exception** and to pass your Redirect or Json response within your Exception.

Roadiz makes this possible with `RZ\Roadiz\Core\Exceptions\ForceResponseException`. For example, in a `Themes\MyAwesomeTheme\Controllers\Blocks>ContactBlockController`, instead of returning the `contactFormManager` response, you will have to throw a `ForceResponseException` with it as an argument.

```
1  // ./themes/MyAwesomeTheme/Controllers/Blocks/ContactBlockController.php  
2
```

```

3  use RZ\Roadiz\Core\Exceptions\ForceResponseException;
4
5  ...
6  // Create contact-form manager and add 3 default fields.
7  $contactFormManager = $this->createContactFormManager()
8                      ->withDefaultFields();
9
10 if (null !== $response = $contactFormManager->handle()) {
11     /*
12      * Force response to bubble through Twig rendering process.
13      */
14     throw new ForceResponseException($response);
15 }
16
17 $form = $contactFormManager->getForm();
18
19 // Assign your form view to display it in Twig.
20 $this->assignation['contactForm'] = $form->createView();
21
22 return $this->render('blocks/contactformblock.html.twig', $this->assignation);

```

Then, in your *master* controller (i.e. *PageController*), *render* method will automatically catch your *ForceResponseException* exception in order to extract the forced response object. Then it will return your response instead of your page twig rendered output.

Alter email configuration after form submit

If you want to customize emails sent with form data, you can use Symfony form events to change the contact form manager options: The following example alters the email subject to add the user email and makes the subject unique for the receiver.

```

$formBuilder->addEventListener(FormEvents::SUBMIT, function (FormEvent $event) use (
    $contactFormManager) {
    $contactFormManager->setSubject($contactFormManager->getSubject() . ': ' .
    $event->getForm()->get('email')->getData());
});







```

You can also use this behaviour to change dynamically the contact form receiver after the user chose it in a select box input.

Note: You can read more about form events at <https://symfony.com/doc/current/form/events.html>

Securing your form with *Google reCAPTCHA*

Roadiz can seamlessly use *Google reCAPTCHA* to secure your contact form against robots. All you need to do is to register on <https://www.google.com/recaptcha/> to ask for a *sitekey* and a *secret*. Once you've got these two keys, add them to your Roadiz settings.

Recaptcha private key (secret)	<input type="text" value="6Ld2bT3AAAAJ:1P4L_4B884-48"/>	  
Recaptcha site key (public)	<input type="text" value="6Ld2bT3AAAAJ:1P4L_4B884-48"/>	  

Then, just use `withGoogleRecaptcha()` method on your contact-form manager.

```
// Create contact-form manager, add 3 default fields and add a reCAPTCHA.
$contactFormManager = $this->createContactFormManager()
    ->withDefaultFields()
    ->withGoogleRecaptcha();
```

Do not forget to add recaptcha form-template and to embed google's javascript.

```
{# Recaptcha v2 #}
<script src='https://www.google.com/recaptcha/api.js'></script>
```

```
{# In your theme' forms.html.twig file #}
{% block recaptcha_widget -%}
    {# Recaptcha v2 #}
    <div class="g-recaptcha" data-sitekey="{{ configs.publicKey }}"></div>
{%- endblock recaptcha_widget %}
```

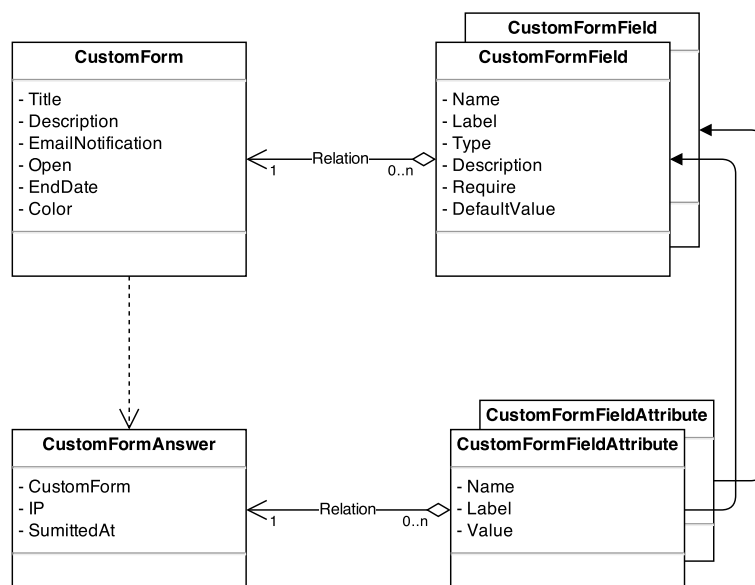
Note: Backend logic with Google Recaptcha is compatible with v2 **and** v3. You'll need to adapt your frontend logic.

Sending contact form and accept application/json

If you want to send your contact form using *window.fetch* and *window.FormData*, Roadiz will still generate an html-based *Response* or *RedirectResponse*. You need to add *Accept: application/json* header to your request so that Roadiz will respond as JSON. Roadiz *JsonResponse* will contain *success* message or *error* messages for each wrong fields.

Building custom forms

Building a custom form looks like building a node but it is a lot simpler! Let's have a look at structure image.



After creating a custom form, you add some question. The questions are the **CustomFormField** type.

The answer is saved in two entities:

- in CustomFormAnswer
- in CustomFormFieldAttribute

The CustomFormAnswer will store the IP and the submitted time. While question answer will be in CustomFormFieldAttribute with the CustomFormAnswer id and the CustomFormField id.

Adding custom form to your theme

If you want to integrate your custom-forms into your theme, you can use Roadiz CustomFormHelper class to generate a standard FormInterface and to create a view into your theme templates.

First you must create a dedicated action for your node or your block if you used {{ nodeSource|render (@AwesomeTheme) }} Twig filter.

```

1  use RZ\Roadiz\Core\Entities\CustomForm;
2  use RZ\Roadiz\Core\Exceptions\EntityAlreadyExistsException;
3  use RZ\Roadiz\Core\Exceptions\ForceResponseException;
4  use Symfony\Cmf\Component\Routing\RouteObjectInterface;
5  use RZ\Roadiz\Utils\CustomForm\CustomFormHelper;
6  use Symfony\Component\Form\FormError;
7  use Symfony\Component\HttpFoundation\JsonResponse;
8
9  // ...
10
11  /*
12   * Get your custom form instance from your node-source
13   * only if you added a *custom-form reference field*.
14   */
15  $customForms = $this->nodeSource->getCustomformReference();
16  if (isset($customForms[0]) && $customForms[0] instanceof CustomForm) {
17      /** @var CustomForm $customForm */
18      $customForm = $customForms[0];
19
20      /*
21       * Verify if custom form is still open
22       * for answers
23       */
24      if ($customForm->isFormStillOpen()) {
25          /*
26           * CustomFormHelper will generate Symfony form against
27           * Roadiz custom form entity.
28           * You can add a Google Recaptcha passing following options.
29           */
30          $helper = new CustomFormHelper($this->get('em'), $customForm);
31          $form = $helper->getFormFromAnswer($this->get('formFactory'), null, true,
↵[
32              'recaptcha_public_key' => $this->get('settingsBag')->get('recaptcha_
↵public_key'),
33              'recaptcha_private_key' => $this->get('settingsBag')->get('recaptcha_
↵private_key'),
34              'request' => $request,
35          ]);
36          $form->handleRequest($request);
37
38          if ($form->isSubmitted() && $form->isValid()) {
39              try {
40                  $answer = $helper->parseAnswerFormData($form, null, $request->
↵getClientIp());
41
42                  if ($request->isXmlHttpRequest()) {
43                      $response = new JsonResponse([
44                          'message' => $this->getTranslator()->trans('form_has_been_
↵successfully_sent')

```

```

45         });
46     } else {
47         $this->publishConfirmMessage(
48             $request,
49             $this->getTranslator()->trans('form_has_been_successfully_
↳ sent')
50         );
51         $response = $this->redirect($this->generateUrl(
52             RouteObjectInterface::OBJECT_BASED_ROUTE_NAME,
53             [RouteObjectInterface::ROUTE_OBJECT => $this->nodeSource->
↳ getParent()]
54         ));
55     }
56     /*
57     * If you are in a BlockController use ForceResponseException
58     */
59     throw new ForceResponseException($response);
60     /*
61     * Or directly return redirect response.
62     */
63     //return $response;
64 } catch (EntityAlreadyExistsException $e) {
65     $form->addError(new FormError($e->getMessage()));
66 }
67 }
68
69 $this->assignation['session']['messages'] = $this->get('session')->
↳ getFlashBag()->all();
70 $this->assignation['form'] = $form->createView();
71 }
72 }

```

If you didn't do it yet, create a custom form theme in your `views/` folder:

```

1  {#
2  # AwesomeTheme/Resources/views/form.html.twig
3  #}
4  {% extends "bootstrap_3_layout.html.twig" %}
5
6  {% block form_row -%}
7      <div class="form-group form-group-{{ form.vars.block_prefixes[1] }}" form-
↳ group-{{ form.vars.name }}">
8          {% if form.vars.block_prefixes[1] != 'separator' %}
9              {{- form_label(form) -}}
10             {% endif %}
11             {{- form_errors(form) -}}
12             {#
13             # Render field description inside your form
14             #}
15             {% if form.vars.attr['data-description'] %}
16                 <div class="form-description">
17                     {{ form.vars.attr['data-description']|markdown }}
18                 </div>
19             {% endif %}
20             {{- form_widget(form) -}}
21         </div>
22     {%- endblock form_row %}
23
24     {% block recaptcha_widget -%}
25         <div class="g-recaptcha" data-sitekey="{{ configs.publicKey }}"></div>
26     {%- endblock recaptcha_widget %}

```

In your main view, add your form and use your custom form theme:

```

1  {#
2  # AwesomeTheme/Resources/views/form-blocks/customformblock.html.twig
3  #}
4  {% if form %}
5      {% form_theme form '@AwesomeTheme/form.html.twig' %}
6      {{ form_start(form) }}
7      {{ form_widget(form) }}
8      <div class="form-group">
9          <button class="btn btn-primary" type="submit">{% trans %}send_form{% _
↪endtrans %}</button>
10     </div>
11     {{ form_end(form) }}
12 {% else %}
13     <p class="alert alert-warning">{% trans %}form_is_not_available{% endtrans %}
↪</p>
14 {% endif %}

```

3.1.8 Services

Roadiz is built upon [Pimple](#) dependency injection container. Thanks to this architecture, all Core and Backoffice services are available from any controller in your themes.

```
$this->get('nameOfService');
```

- Doctrine entity manager: `$this->get('em')`
- Twig rendering environment: `$this->get('twig.environment')`
- Translator: `$this->get('translator')`
- Url matcher: `$this->get('urlMatcher')`
- Url generator: `$this->get('urlGenerator')`
- Authorization checker: `$this->get('securityAuthorizationChecker')`
- User token storage: `$this->get('securityTokenStorage')`
- Firewall: `$this->get('firewall')`
- Assets packages: `$this->get('assetPackages')`
- Email manager: `$this->get('emailManager')`
- Contact form manager: `$this->get('contactFormManager')`
- Accessing global settings *ParameterBag*: `$this->get('settingsBag')`
- Accessing global node-types *ParameterBag*: `$this->get('nodeTypesBag')`
- Getting an entity handler: `$this->get('factory.handler')->getHandler($myEntity)`
- ...

Entity APIs

All these services are Doctrine repository wrappers meant to ease querying entities inside your themes and according to `AuthorizationChecker`. This will implicitly check if nodes or node-sources are published when you request them without bothering to insert the right criteria in your *findBy* calls.

Each of these implements `AbstractApi` methods `getBy` and `getOneBy`

- `nodeApi`
- `nodeTypeApi`

- nodeSourceApi
- tagApi

Using Solr API

Solr is a really powerful tool to search over your node database with a clever plain-text search engine and the ability to highlight your criteria in the search results. Before going further, make sure that a Solr server is available and that it is well configured in your `config.yml`. You can use the `bin/roadiz solr:check` command to verify and then `bin/roadiz solr:reindex` command to force synchronizing your node database with Solr index.

You can use the `solr.search.nodeSource` service and its two methods to get node-sources from a search query.

Simple search results

`$this->get('solr.search.nodeSource')->search()` method will return a `SolrSearchResults` *traversable* object listing `NodesSources`:

```
$criteria = [];  
/** @var SolrSearchResults $results */  
$results = $this->get('solr.search.nodeSource')  
    ->search(  
    $request->get('q'), # Use ?q query parameter to search with  
    $criteria,          # a simple criteria array to filter search_  
->results  
    10,                # result count  
    true               # Search in tags too  
    10000              # Proximity (optional, default: 10000)  
    1                  # Page (optional, default: 1)  
    );  
  
foreach ($results as $nodeSource) {  
    # NodesSources object  
    echo $nodeSource->getTitle();  
}
```

Search results with highlighting

`$this->get('solr.search.nodeSource')->searchWithHighlight()` method will return a `SolrSearchResults` *traversable* object with arrays with a simple structure: `nodeSource` for the `NodesSources` object and highlighting for the `html` data with highlighted text wrapped in `span`. `solr-highlight` `html` tag.

```
$criteria = [];  
/** @var SolrSearchResults $results */  
$results = $this->get('solr.search.nodeSource')  
    ->searchWithHighlight(  
    $request->get('q'), # Use ?q query parameter to search with  
    $criteria,          # a simple criteria array to filter search_  
->results  
    10,                # result count  
    true               # Search in tags too  
    10000              # Proximity (optional, default: 10000)  
    1                  # Page (optional, default: 1)  
    );  
  
foreach ($results as $result) {
```



```

# NodesSources object
$nodeSource = $result['nodeSource'];
# String object (HTML)
$highlight = $result['highlighting'];
}

```

Count search results

`$this->get('solr.search.nodeSource')->search()` and `$this->get('solr.search.nodeSource')->searchWithHighlight()` methods will return a `SolrSearchResults` *traversable* object. You can use `SolrSearchResults::getResultCount()` to get results count.

```

$criteria = [];
/** @var SolrSearchResults $results */
$results = $this->get('solr.search.nodeSource')
    ->search(
        $request->get('q'), # Use ?q query parameter to search with
        $criteria,         # a simple criteria array to filter search
        10,                # result count
        true,              # Search in tags too
        10000,             # Proximity (optional, default: 10000)
        1,                 # Page (optional, default: 1)
    );

$pageCount = ceil($results->getResultCount() / $this->getItemPerPage());
$itemPerPage = $this->getItemPerPage();

```

Search criteria

Solr will search in *NodesSources* index by default, but it will not filter by translation, type or visibility. You can add your own search criteria using similar filter names as `nodeSourceApi`.

- `visible`: boolean
- `translation`: a `Translation` object
- `_locale`: string
- `tags`: a `Tag` object or `Tag` array
- `nodeType`: a `NodeType` object
- `status`: defaults to `Node::PUBLISHED`
- `publishedAt`: `\DateTime` or array like `EntityRepository::findBy` method.

```

$criteria = [
    'visible' => true,
    'translation' => $translation,
    // Returns only published nodes-sources
    'publishedAt' => ['<=', new \DateTime()],
    'nodeType' => [
        $this->get('nodeTypesBag')->get('Page'),
        // ...
    ],
];

```

3.1.9 Services list

Here is the current list of Roadiz services registered into Kernel container. These can be overridden or used from any Controller with `$this->get ()` method.

Kernel

stopwatch `Symfony\Component\Stopwatch\Stopwatch`

kernel `RZ\Roadiz\Core\Kernel`

dispatcher `Symfony\Component\EventDispatcher\EventDispatcher`

Assets

versionStrategy `Symfony\Component\Asset\VersionStrategy\EmptyVersionStrategy`

interventionRequestSupportsWebP `bool`

interventionRequestConfiguration `AM\InterventionRequest\Configuration`

interventionRequestSubscribers `array`

interventionRequestLogger `Monolog\Logger`

interventionRequest `AM\InterventionRequest\InterventionRequest`

assetPackages `RZ\Roadiz\Utils\Asset\Packages`

Back-office

backoffice.entries `array`

Bags

settingsBag `RZ\Roadiz\Core\Bags\Settings`

rolesBag `RZ\Roadiz\Core\Bags\Roles`

nodeTypesBag `RZ\Roadiz\Core\Bags\NodeTypes`

Console

console.commands `array`

Debug

messengercollector `DebugBar\DataCollector\MessagesCollector`

doctrine.debugstack `Doctrine\DBAL\Logging\DebugStack`

debugbar `RZ\Roadiz\Utils\DebugBar\RoadizDebugBar`

debugbar.renderer `DebugBar\JavascriptRenderer`

Doctrine

doctrine.relative_entities_paths array

doctrine.entities_paths array

em.config Doctrine\ORM\Configuration

em Doctrine\ORM\EntityManager, you can access it using `$this->get(EntityManagerInterface::class)`.

em.eventSubscribers array

nodesSourcesUrlCacheProvider Doctrine\Common\Cache\CacheProvider

CacheProvider::class ^{Factory} Creates a `CacheProvider::class` using Roadiz configuration, , you can access it using `$this->get(CacheProvider::class)`.

Embed documents

document.platforms array

embed_finder.youtube ^{Factory} RZ\Roadiz\Utils\MediaFinders\YoutubeEmbedFinder

embed_finder.vimeo ^{Factory} RZ\Roadiz\Utils\MediaFinders\VimeoEmbedFinder

embed_finder.dailymotion ^{Factory} RZ\Roadiz\Utils\MediaFinders\DailymotionEmbedFinder

embed_finder.soundcloud ^{Factory} RZ\Roadiz\Utils\MediaFinders\SoundcloudEmbedFinder

embed_finder.mixcloud ^{Factory} RZ\Roadiz\Utils\MediaFinders\MixcloudEmbedFinder

embed_finder.spotify ^{Factory} RZ\Roadiz\Utils\MediaFinders\SpotifyEmbedFinder

embed_finder.ted ^{Factory} RZ\Roadiz\Utils\MediaFinders\TedEmbedFinder

embed_finder.twitch ^{Factory} RZ\Roadiz\Utils\MediaFinders\TwitchEmbedFinder

Entity Api

nodeApi RZ\Roadiz\CMS\Utils\NodeApi

nodeTypeApi RZ\Roadiz\CMS\Utils\NodeTypeApi

nodeSourceApi RZ\Roadiz\CMS\Utils\NodeSourceApi

tagApi RZ\Roadiz\CMS\Utils\TagApi

Factories

emailManager ^{Factory} RZ\Roadiz\Utils\EmailManager

contactFormManager ^{Factory} RZ\Roadiz\Utils\ContactFormManager

NodeFactory::class RZ\Roadiz\Utils\Node\NodeFactory. Factory to create new nodes from a title, a node-type and translation.

TagFactory::class RZ\Roadiz\Utils\Tag\TagFactory. Factory to create new tags from a title, a parent tag and a translation.

factory.handler RZ\Roadiz\Core\Handlers\HandlerFactory Creates any Handler based on entity class.

node.handler ^{Factory} RZ\Roadiz\Core\Handlers\NodeHandler

nodes_sources.handler ^{Factory} RZ\Roadiz\Core\Handlers\NodesSourcesHandler

node_type.handler ^{Factory} RZ\Roadiz\Core\Handlers\NodeTypeHandler

node_type_field.handler Factory RZ\Roadiz\Core\Handlers\NodeTypeFieldHandler
document.handler Factory RZ\Roadiz\Core\Handlers\DocumentHandler
custom_form.handler Factory RZ\Roadiz\Core\Handlers\CustomFormHandler
custom_form_field.handler Factory RZ\Roadiz\Core\Handlers\CustomFormFieldHandler
folder.handler Factory RZ\Roadiz\Core\Handlers\FolderHandler
font.handler Factory RZ\Roadiz\Core\Handlers\FontHandler
group.handler Factory RZ\Roadiz\Core\Handlers\GroupHandler
newsletter.handler Factory RZ\Roadiz\Core\Handlers\NewsletterHandler
tag.handler Factory RZ\Roadiz\Core\Handlers\TagHandler
translation.handler Factory RZ\Roadiz\Core\Handlers\TranslationHandler
document.viewer Factory RZ\Roadiz\Core\Viewers\DocumentViewer **Deprecated:**
translation.viewer Factory RZ\Roadiz\Core\Viewers\TranslationViewer
user.viewer Factory RZ\Roadiz\Core\Viewers\UserViewer
document.url_generator Factory RZ\Roadiz\Utils\UrlGenerators\DocumentUrlGenerator
document.factory Factory RZ\Roadiz\Utils\Document\DocumentFactory

Forms

formValidator Symfony\Component\Form\Validator\ValidatorInterface
formFactory Symfony\Component\Form\FormFactoryInterface
form.extensions array
form.type.extensions array
Rollerworks\Component>PasswordStrength\Blacklist\BlacklistProviderInterface Blacklist chained provider for Password forms.
Rollerworks\Component>PasswordStrength\Validator\Constraints\BlacklistValidator Blacklist form validator to be used and instanciated by Symfony ContainerConstraintValidatorFactory.

Importers

RZ\Roadiz\CMS\Importers\ChainImporter Factory Creates an chained importer that will import serialized data based on required entity class.
RZ\Roadiz\CMS\Importers\GroupsImporter Factory Creates an importer for Group
RZ\Roadiz\CMS\Importers\NodesImporter Factory Creates an importer for Node
RZ\Roadiz\CMS\Importers\NodeTypesImporter Factory Creates an importer for NodeType
RZ\Roadiz\CMS\Importers\RolesImporter Factory Creates an importer for Role
RZ\Roadiz\CMS\Importers\SettingsImporter Factory Creates an importer for Setting
RZ\Roadiz\CMS\Importers\TagsImporter Factory Creates an importer for Tag

Logger

logger.handlers array

logger.path string

logger Monolog\Logger

Mailer

mailer.transport \Swift_SmtpTransport or \Swift_SendmailTransport

mailer \Swift_Mailer

Routing

httpKernel Symfony\Component\HttpKernel\HttpKernel

requestStack Symfony\Component\HttpFoundation\RequestStack

requestContext Symfony\Component\Routing\RequestContext

resolver Symfony\Component\HttpKernel\Controller\ControllerResolver

argumentResolver Symfony\Component\HttpKernel\Controller\ArgumentResolver

router Symfony\Cmf\Component\Routing\ChainRouter

staticRouter RZ\Roadiz\Core\Routing\StaticRouter

nodeRouter RZ\Roadiz\Core\Routing\NodeRouter

redirectionRouter RZ\Roadiz\Core\Routing\RedirectioRouter

urlGenerator Alias to router

httpUtils Symfony\Component\Security\Http\HttpUtils

routeListener RZ\Roadiz\Core\Events\TimedRouteListener

routeCollection RZ\Roadiz\Core\Routing\RoadizRouteCollection

Security

session.pdo \PDO or null if pdo session are not configured.

session.storage Symfony\Component\HttpFoundation\Session\Storage\NativeSessionStorage

session Symfony\Component\HttpFoundation\Session\Session

sessionTokenStorage Symfony\Component\Security\Csrf\TokenStorage\SessionTokenStorage

csrfTokenManager Symfony\Component\Security\Csrf\CsrfTokenManager

securityAuthenticationUtils Symfony\Component\Security\Http\Authentication\AuthenticationUtils

contextListener Symfony\Component\Security\Http\Firewall\ContextListener

accessMap Symfony\Component\Security\Http\AccessMap

SymfonyComponentSecurityCoreUserUserProviderInterface Symfony\Component\Security\Core\User\ChainU

userProviders array<Symfony\Component\Security\Core\User\UserProviderInterface>

userChecker Symfony\Component\Security\Core\User\UserChecker

daoAuthenticationProvider Symfony\Component\Security\Core\Authentication\Provider\DaoAuthenti

rememberMeAuthenticationProvider Symfony\Component\Security\Core\Authentication\Provider\Reme

rememberMeCookieName string

rememberMeCookieLifetime integer

cookieClearingLogoutHandler Symfony\Component\Security\Http\Logout\CookieClearingLogoutHandler

tokenBasedRememberMeServices Symfony\Component\Security\Http\RememberMe\TokenBasedRememberMeServices

rememberMeListener Symfony\Component\Security\Http\Firewall\RememberMeListener

authenticationProviderList array<Symfony\Component\Security\Core\Authentication\Provider\AuthenticationProvider>

authenticationManager Symfony\Component\Security\Core\Authentication\AuthenticationManager

security.voters array

accessDecisionManager Symfony\Component\Security\Core\Authorization\AccessDecisionManager

securityAuthenticationTrustResolver Symfony\Component\Security\Core\Authentication\AuthenticationTrustResolver

securityAuthorizationChecker Symfony\Component\Security\Core\Authorization\AuthorizationChecker

securityTokenStorage Symfony\Component\Security\Core\Authentication\Token\Storage\TokenStorageInterface

securityAccessListener Symfony\Component\Security\Http\Firewall\AccessListener

roleHierarchy RZ\Roadiz\Utils\Security\DoctrineRoleHierarchy

roleHierarchyVoter Symfony\Component\Security\Core\Authorization\Voter\RoleHierarchyVoter

groupVoter RZ\Roadiz\Core\Authorization\Voter\GroupVoter

switchUser Symfony\Component\Security\Http\Firewall\SwitchUserListener

firewallMap Symfony\Component\Security\Http\FirewallMap

passwordEncoder array

userImplementations array

userEncoderFactory Symfony\Component\Security\Core\Encoder\EncoderFactory

firewall RZ\Roadiz\Utils\Security\TimedFirewall

accessDeniedHandler RZ\Roadiz\Core\Authorization\AccessDeniedHandler

nodeChrootResolvers array<RZ\Roadiz\Core\Authorization\Chroot\NodeChrootResolver>

RZRoadizCoreAuthorizationChrootNodeChrootResolver RZ\Roadiz\Core\Authorization\Chroot\NodeChrootResolver

Serialization

JMSSerializerSerializerBuilder JMS\Serializer\SerializerBuilder

serializer.subscribers array

serializer JMS\Serializer\Serializer

Solr

solr Solarium\Client

AdapterInterface Solarium\Core\Client\Adapter\AdapterInterface

SolariumFactoryInterface RZ\Roadiz\Core\SearchEngine\SolariumFactory

solr.ready boolean Return true if Solr server is reachable.

solr.search.nodeSource ^{Factory} RZ\Roadiz\Core\SearchEngine\NodeSourceSearchHandler

solr.search.document ^{Factory} RZ\Roadiz\Core\SearchEngine\DocumentSearchHandler

Themes

themeResolver RZ\Roadiz\Utils\Theme\StaticThemeResolver

ThemeGenerator RZ\Roadiz\Utils\Theme\ThemeGenerator

logger.themes Monolog\Logger

Translation

defaultTranslation RZ\Roadiz\Core\Entities\Translation or null if you don't have any default translation.

translator.locale string or null

translator Symfony\Component\Translation\Translator

Twig

twig.cacheFolder string

twig.loaderFilesystem Twig\Loader\FilesystemLoader

twig.environment_class ^{Private} Twig\Environment

twig.formRenderer Symfony\Bridge\Twig\Form\TwigRendererEngine

twig.environment Twig\Environment

twig.extensions Doctrine\Common\Collections\ArrayCollection

twig.filters Doctrine\Common\Collections\ArrayCollection

twig.fragmentHandler Symfony\Component\HttpKernel\Fragment\FragmentHandler

twig.profile Twig\Profiler\Profile

twig.routingExtension Symfony\Bridge\Twig\Extension\RoutingExtension

twig.centralTruncateExtension Twig\TwigFilter

twig.cacheExtension Asm89\Twig\CacheExtension\Extension

Configuration

config.path string

config.handler RZ\Roadiz\Config\YamlConfigurationHandler

config array

Workflow

workflow.registry Symfony\Component\Workflow\Registry

workflow.node_workflow RZ\Roadiz\Workflow\NodeWorkflow

Utils

utils.nodeNameChecker RZ\Roadiz\Utils\Node\NodeNameChecker

utils.uniqueNodeGenerator RZ\Roadiz\Utils\Node\UniqueNodeGenerator

utils.universalDataDuplicator RZ\Roadiz\Utils\Node\UniversalDataDuplicator

OpenId

RZRoadizOpenIdOAuth2LinkGenerator: RZ\Roadiz\OpenId\OAuth2LinkGenerator

jwtRoleStrategies array<RZ\Roadiz\OpenId\Authentication\Provider\JwtRoleStrategy>

RZRoadizOpenIdAuthenticationProviderJwtRoleStrategy RZ\Roadiz\OpenId\Authentication\Provider\Chai

RZRoadizOpenIdAuthenticationProviderOAuth2AuthenticationProvider RZ\Roadiz\OpenId\Authentication\Pr

RZRoadizOpenIdAuthenticationProviderOpenIdAccountProvider RZ\Roadiz\OpenId\Authentication\Provide

RZRoadizOpenIdDiscovery RZ\Roadiz\OpenId\Discovery or null

oauth2AuthenticationProvider.validators: array<RZ\Roadiz\OpenId\Authentication\Validator\JwtValida

3.1.10 Serialization

Roadiz CMS uses `jms/serializer` to perform JSON serialization over any objects, especially *Doctrine* entities.

```
$response = new JsonResponse(
    $this->get('serializer')->serialize(
        $this->getNodeSource(),
        'json',
        SerializationContext::create()->setGroups(['nodes_sources', 'urls', 'walker
    ↪', 'children'])
    ),
    Response::HTTP_OK,
    [],
    true
);
```

Customize existing serialized entities

Serialize nodes-sources URL

You can add data in your serialized data from your themes using `EventSubscriberInterface` listening on `serializer.post_serialize` event. For example, you may want to get your *reachable* `NodesSources` URL in their JSON response. Here is how to do:

```
<?php
declare(strict_types=1);

namespace Themes\MyAwesomeTheme\Serialization;

use JMS\Serializer\EventDispatcher\EventSubscriberInterface;
use JMS\Serializer\EventDispatcher\ObjectEvent;
use JMS\Serializer\Metadata\StaticPropertyMetadata;
use JMS\Serializer\Visitor\SerializationVisitorInterface;
use Pimple\Container;
use RZ\Roadiz\Core\ContainerAwareInterface;
use RZ\Roadiz\Core\ContainerAwareTrait;
use RZ\Roadiz\Core\Entities\NodesSources;
use Symfony\Component\Routing\RouteObjectInterface;
use Symfony\Component\Routing\Generator\UrlGeneratorInterface;

final class NodesSourcesUriSubscriber implements EventSubscriberInterface,
    ↪ContainerAwareInterface
{
    use ContainerAwareTrait;
```



```

/**
 * DocumentUriSubscriber constructor.
 *
 * @param Container $container
 */
public function __construct(Container $container)
{
    $this->container = $container;
}

/**
 * @inheritdoc
 */
public static function getSubscribedEvents()
{
    return [[
        'event' => 'serializer.post_serialize',
        'method' => 'onPostSerialize',
    ]];
}

/**
 * @param ObjectEvent $event
 * @return void
 */
public function onPostSerialize(ObjectEvent $event)
{
    $nodeSource = $event->getObject();
    $visitor = $event->getVisitor();
    $context = $event->getContext();

    if ($context->hasAttribute('groups') &&
        in_array('urls', $context->getAttribute('groups'))) {
        /** @var UrlGeneratorInterface $urlGenerator */
        $urlGenerator = $this->get('urlGenerator');
        if ($nodeSource instanceof NodesSources &&
            null !== $nodeSource->getNode() &&
            null !== $nodeSource->getNode()->getNodeTypes() &&
            $visitor instanceof SerializationVisitorInterface &&
            $nodeSource->getNode()->isPublished() &&
            $nodeSource->getNode()->getNodeTypes()->isReachable()
        ) {
            $visitor->visitProperty(
                new StaticPropertyMetadata('string', 'url', []),
                $urlGenerator->generate(
                    RouteObjectInterface::OBJECT_BASED_ROUTE_NAME,
                    [
                        RouteObjectInterface::ROUTE_OBJECT => $nodeSource
                    ],
                    UrlGeneratorInterface::ABSOLUTE_URL
                )
            );
        }
    }
}

```

Then register your NodesSourcesUriSubscriber in your theme services:

```

$container->extend('serializer.subscribers', function (array $subscribers,
↳ Container $c) {
    $subscribers[] = new NodesSourcesUriSubscriber($c);

```

```
    return $subscribers;
});
```

Then your JSON response will contain the additional key `url` :

```
{
    ...
    "url": "http://myawesomesite.test/about-us"
}
```

You can add every piece of data in your serialized responses, even node children by injecting a *tree-walker*.

Serialize documents URL

Same way for injecting your document URL (i.e. image path, or iframe source), we need to call Roadiz document URL generator for any Document serialized into our JSON response:

```
<?php
declare(strict_types=1);

namespace Themes\MyAwesomeTheme\Serialization;

use JMS\Serializer\EventDispatcher\EventSubscriberInterface;
use JMS\Serializer\EventDispatcher\ObjectEvent;
use JMS\Serializer\Metadata\StaticPropertyMetadata;
use JMS\Serializer\Visitor\SerializationVisitorInterface;
use Pimple\Container;
use RZ\Roadiz\Core\ContainerAwareInterface;
use RZ\Roadiz\Core\ContainerAwareTrait;
use RZ\Roadiz\Core\Entities\Document;
use RZ\Roadiz\Core\Exceptions\InvalidEmbedId;
use RZ\Roadiz\Utils\MediaFinders\EmbedFinderFactory;
use RZ\Roadiz\Utils\UrlGenerators\DocumentUrlGenerator;

final class DocumentUriSubscriber implements EventSubscriberInterface,
↳ ContainerAwareInterface
{
    use ContainerAwareTrait;

    /**
     * DocumentUriSubscriber constructor.
     *
     * @param Container $container
     */
    public function __construct(Container $container)
    {
        $this->container = $container;
    }

    /**
     * @inheritDoc
     */
    public static function getSubscribedEvents()
    {
        return [[
            'event' => 'serializer.post_serialize',
            'method' => 'onPostSerialize',
            'class' => Document::class,
        ]];
    }
}
```

```

/**
 * @param ObjectEvent $event
 * @return void
 */
public function onPostSerialize(ObjectEvent $event)
{
    $document = $event->getObject();
    $visitor = $event->getVisitor();
    $context = $event->getContext();

    if (null !== $this->container &&
        $context->hasAttribute('groups') &&
        in_array('urls', $context->getAttribute('groups'))) {
        /** @var DocumentUrlGenerator $urlGenerator */
        $urlGenerator = $this->get('document.url_generator')->setDocument (
↪$document);

        if ($document instanceof Document &&
            $visitor instanceof SerializationVisitorInterface) {
            $urls = [];
            if ($document->isEmbed() && $document->getEmbedId()) {
                try {
                    /** @var EmbedFinderFactory $embedFinderFactory */
                    $embedFinderFactory = $this->
↪get (EmbedFinderFactory::class);
                    if (null !== $document->getEmbedPlatform() &&
                        $embedFinderFactory->supports($document->
↪getEmbedPlatform())) {
                        $embedFinder = $embedFinderFactory->createForPlatform(
                            $document->getEmbedPlatform(),
                            $document->getEmbedId()
                        );
                        if (null !== $embedFinder) {
                            $urls['embed'] = $embedFinder->getSource();
                        }
                    }
                } catch (InvalidEmbedId $embedException) {
                }
            }
            if ($document->isProcessable()) {
                $visitor->visitProperty(
                    new StaticPropertyMetadata('array', 'urls', []),
                    array_merge($urls, [
                        'original' => $urlGenerator->setOptions([
                            'noProcess' => true,
                        ])->getUrl(true)
                    ], $this->getSizes($urlGenerator))
                );
            } else {
                if ($document->hasThumbnails()) {
                    $thumbnail = $document->getThumbnails()->first();
                    if ($thumbnail instanceof Document && $thumbnail->
↪isProcessable()) {
                        /** @var DocumentUrlGenerator $thumbUrlGenerator */
                        $thumbUrlGenerator = $this->get('document.url_generator
↪')->setDocument($thumbnail);
                        $urls = array_merge($urls, $this->getSizes(
↪$thumbUrlGenerator));
                    }
                }
                $visitor->visitProperty(
                    new StaticPropertyMetadata('array', 'urls', []),
                    array_merge($urls, [

```

```
        'original' => $urlGenerator->setOptions([
            'noProcess' => true
        ])->getUrl(true),
    ])
    );
}
}
}

protected function getSizes(DocumentUrlGenerator $generator): array
{
    return [];
}
}
```

Groups

id Serialize every entity `id`.

timestamps Serialize every date-timed entity `createdAt` and `updatedAt` fields.

position Serialize every entity `position` fields.

color Serialize every entity `color` fields.

nodes_sources Serialize entities in a `NodesSources` context (all fields).

nodes_sources_base Serialize entities in a `NodesSources` context, but with essential information.

nodes_sources_documents Serialize documents linked to a `NodesSources` for each virtual field.

nodes_sources_default Serialize `NodesSources` fields not contained in any **group**.

nodes_sources_“group“ Custom serialization groups are created according to your node-typ fields groups. For example, if you set a field to a link group, `nodes_sources_link` serialization group will be automatically generated for this field. *Be careful*, Roadiz will use groups *canonical names* to generate serialization groups, it can mix `_` and `-`.

node Serialize entities in a `Node` context.

tag Serialize entities in a `Tag` context.

tag_base Serialize entities in a `Tag` context.

node_type Serialize entities in a `NodeType` context.

attribute Serialize entities in a `Attribute` context.

custom_form Serialize entities in a `CustomForm` context.

document Serialize entities in a `Document` context.

folder Serialize entities in a `Folder` context.

translation Serialize entities in a `Translation` context.

setting Serialize entities in a `Setting` context.

setting_group Serialize entities in a `SettingGroup` context.

3.1.11 Case studies

Some step-to-step guides to work with Roadiz.

Download a website on my computer to work with Vagrant

This case study is meant to get a fresh development environment from an **existing** Roadiz **Source edition** website and theme. Following code snippets are using some variables data, in these examples I'll use:

- MYUSER as the MySQL database user.
- MYPASSWORD as the MySQL database user password.
- MYDATABASE as the MySQL database name.
- ~/Documents/Websites as the working directory on your own computer.
- database-YYYY-mm-dd.sql is the mysql dump file name, replace YYYY-mm-dd with the current date.
- mysuperwebsite is your website root folder.
- git@github.com: johndoe/SuperTheme.git is an example *Github* repository for your theme.
- SuperTheme is an example theme name and folder.

On the production server:

1. Generate a database dump on your production server.

```
mysqldump -uMYUSER -pMYPASSWORD MYDATABASE > database-YYYY-mm-dd.sql
```

Then download it on your computer. You can also use *phpmyadmin* web tool to export your database tables. Make sure to disable *foreign key verification* and add the *DROP IF EXISTS* directive on *phpmyadmin* export form.

On your computer:

1. Clone Roadiz on your favorite folder, choose well between master or develop branch if you want the stable version or the latest features.

```
cd ~/Documents/Websites;
# Here I choose the develop branch, because I'm warrior
git clone -b develop https://github.com/roadiz/roadiz.git mysuperwebsite;
```

2. Clone your website theme in Roadiz themes/ folder, choose well your branch too. If you already have a *develop* branch, clone with *-b develop* option.

```
cd ~/Documents/Websites/mysuperwebsite/themes;
# My theme already has a develop branch so...
git clone -b develop git@github.com: johndoe/SuperTheme.git SuperTheme;
```

3. **[Optional]** Initialize *git-flow* on the theme. You should always work on *develop*. *Master* branch is only for releases. If you don't have *git-flow* on your computer, you can find some help on the [official documentation](#).

```
cd ~/Documents/Websites/mysuperwebsite/themes/SuperTheme;
# You must fetch every available branches before initializing git flow
git checkout master;
git checkout develop;
git flow init;
# Follow instructions
# Git flow should checkout on develop branch for you
```

4. Install Roadiz' *Composer* dependencies (after cloning the theme to be sure that all *composer* dependencies are loaded)

```
cd ~/Documents/Websites/mysuperwebsite;
composer install --no-dev;
```

5. Launch your Vagrant environment. Do not to automatically provision your VM if you want to choose what tool to install.

```
vagrant up --no-provision;
# ... lots of lines, bla bla bla
```

Choose tools to install on your VM, roadiz provisioner is mandatory... obviously, devtools provisioner will install *Composer*, *Node.js*, *Grunt* and *Bower* commands. If you have lots of website on your computer, it's better to install these tools directly on your host machine, they will be more effective than on the VM. And you will be able to take advantage of *Composer* and *NPM* cache between your dev websites.

```
# Everything
vagrant provision --provision-with roadiz,phpmyadmin,mailcatcher,solr,devtools
# OR on a dev computer
vagrant provision --provision-with roadiz,phpmyadmin,mailcatcher,solr
```

6. Import your database dump. First, you'll need to copy it into your Roadiz website to make it available within your Vagrant VM. Then import it in your VM using the `mysql` tool.

```
mv ~/Downloads/database-YYYY-mm-dd.sql ~/Documents/Websites/mysuperwebsite/
↪database-YYYY-mm-dd.sql;
cd ~/Documents/Websites/mysuperwebsite;
# Enter your VM
vagrant ssh;
# Your website is located in /var/www folder
cd /var/www;
mysql -uroadiz -proadiz roadiz < database-YYYY-mm-dd.sql;
# Exit your VM
exit;
```

7. Update your `conf/config.yml` file to fill in your `mysql` credentials.

```
cd ~/Documents/Websites/mysuperwebsite;
# composer should have create a starter config file for you
subl conf/config.yml; # If you work SublimeText
```

8. Use the `bin/roadiz generate:nsentities` to regenerate *Doctrine* entities existing in database but not as files.

```
cd ~/Documents/Websites/mysuperwebsite;
vagrant ssh;
cd /var/www;
bin/roadiz generate:nsentities;
# You may have to check database schema if your production website is not up to
# date with latest Roadiz
bin/roadiz orm:schema-tool:update --dump-sql --force;
```

9. Download your production documents to your dev VM. You don't have to do this within your VM.

```
cd ~/Documents/Websites/mysuperwebsite/files;
rsync -avcz -e "ssh -p 22" myuser@superwebsite.com:~/path/to/roadiz/files/ ./
# do not forget ending slashes in both paths.
```

10. If you are using a Vagrant VM you have to add your IP address to the `dev.php` file to authorize your host computer to use the development environment.
11. Connect to `http://localhost:8080/dev.php` to begin. Every outgoing emails should be caught by *Mailcatcher*. You can see them at address `http://localhost:1080`.

3.1.12 Contributing

If you want to contribute to Roadiz project by reporting issues or hacking code, let us thank you! You are awesome!

Reporting issues

When you encounter an issue with Roadiz we would love to hear about it. Because thanks to you, we can make the most awesome and stable CMS! If you submit a bug report please include all informations available to you, here are some things you can do:

- Try to simplify the things you are doing until getting a minimal set of actions reproducing the problem.
- Do not forget to join a screenshot or a trace of your error.

Running tests

If you developed a new feature or simply want to try out an installation of Roadiz you can run unit-tests. For this you will need to install the testing dependencies, this can easily be done using:

```
composer update --dev
```

You have to run unit-tests on a dedicated database not to lose any existing Roadiz website. You can create a `conf/config_test.yml` YAML configuration which will be read only for this environment. Then, wire this configuration to a blank database. Unit-tests can be launched by the following command:

```
php bin/phpunit -v --bootstrap=tests/bootstrap.php --whitelist ./src tests/
```

If you are writing a feature, don't forget to write a unit test for it. You can find some example in the folder `tests`. In Roadiz, there are 4 types of tests:

- Standard tests which must extend `\PHPUnit_Framework_TestCase`. These tests should only test simple logic methods and classes as they won't require Roadiz kernel to boot up.
- Kernel dependent tests which must extend `RZRoadizTestsKernelDependentCase`. These tests should only test logic classes and methods inside Roadiz kernel without any database concern.
- Schema dependent tests which must extend `RZ\Roadiz\Tests\SchemaDependentCase`. These tests should only test low level database methods and classes without relying on node-types or translations. Use this type of testing if you want to test Roadiz entities and repositories methods except for Nodes and NodeTypes.
- DefaultTheme dependent tests which must extend `RZ\Roadiz\Tests\DefaultThemeDependentCase`. These tests rely on a complete Roadiz installation with existing node-types and translation. They are longer to prepare as PHPUnit must install a fresh Roadiz with DefaultTheme at each case.

Note: Each `SchemaDependentCase` and `DefaultThemeDependentCase` will provision a fresh Roadiz database then drop it. Make sure to use a dedicated database. If you execute unit-tests from an existing Roadiz website, you'll have to run `bin/roadiz generate:nsentities` at the end of your testing session to build your `NodesSources` classes again (every environment share the same `gen-src` folder).

Coding style

The code you contributed to the project should respect the guidelines defined in PHP *PSR2* standard. If you install the requirements for devs by the command `composer update --dev`, you can use *phpcs* to check your code. You can copy and paste the following command-lines to check easily:

```
php bin/phpcs --report=full --report-file=./report.txt -p ./
```

Or you can use *phpcbf* to automatically fix code style issues.

```
php bin/phpcbf --report=full --report-file=./report.txt -p ./
```

Please take those rules into account, we aim to have a clean codebase. A coherent codestyle will contribute to Roadiz stability. Your code will be checked when we will be considering your pull requests.

Static analysis

Then we use *phpstan* as a static code analyzer to check bugs and misuses before they occur:

```
php bin/phpstan analyse -c phpstan.neon -l 1 src themes/Rozier themes/Install
```

Standard Edition

Roadiz *Standard Edition* comes with a *Makefile* to make it easier to test your sources and your theme. Just execute `make test` and *phpcbf* and *phpstan* will test your theme sources. If you are using *Gitlab CI/CD* with our `.gitlab-ci.yml` file, those tests will be executed at each pipeline trigger.

3.1.13 Troubleshooting

Empty caches manually for an environment

If you experience errors only on a dedicated environment such as `prod`, `dev` or `install`, it means that cache is not fresh for these environments. As a first try, you should always call `bin/roadiz cache:clear -e prod`; (replace *prod* by your environment) in command line.

If you still get errors from a specific env and you are using an *OPcode* cache or *var cache* (*APC*, *XCache*), call `clear_cache.php` entry point *from your browser* or execute `curl http://localhost/clear_cache.php` from your command line.

Problem with entities and Doctrine cache?

After each Roadiz **upgrade** you should always upgrade your node-sources entity classes and upgrade database schema.

```
bin/roadiz generate:nsentities;
bin/roadiz orm:schema-tool:update --dump-sql --force;
bin/roadiz cache:clear -e prod;
```

If you are using a *OPCode var cache* like *APC*, *XCache*, you should purge it as Roadiz stores doctrine configuration there for better performances, call `clear_cache.php` entry point from your browser or `curl http://localhost/clear_cache.php` from your command line.

Running Roadiz behind a reverse proxy

If you are behind a reverse-proxy like *Varnish* or *Nginx proxy* on a *Docker* environment, IP addresses, domain name and proto (`https/http`) could not be correctly set. So you will have to [tell Roadiz to trust your proxy](#) in order to use `X_FORWARDED_*` env vars.

Add this line to your `index.php` and `preview.php` files after `$request = Request::createFromGlobals();` line.


```
$request = Request::createFromGlobals(); // Existing line to get request
// Trust incoming request IP as your reverse proxy for only X_FORWARDED... headers.
Request::setTrustedProxies(
    [$request->server->get('REMOTE_ADDR')],
    Request::HEADER_X_FORWARDED_ALL
);
```

Find help before posting an issue on Github

Join us on Gitter: <https://gitter.im/roadiz/roadiz>

4.1 Extension system

4.1.1 Extending Roadiz

It is time to see how to extend Roadiz! As you read in Roadiz *Philosophy* part, we won't ship "plugin" or "module" like others CMS. But you will be able to add a lot of features using the part that really matters: Themes!

Theme powered CMS

We coded the Theme system to be the core of your extending experience. You don't need to change something else than your theme. So you can use a versioning tool or backup easily your work which will be only at one place.

You can add new entities. If so, don't forget to add your `Entities` namespace in Roadiz config file. With these additional entities, you maybe will need to create a back-office entry to manage them. It's easy! Let's see how to.

Create your own database entities

You can create a theme with your own entities. Just add your `Entities` folder to the global configuration file (`app/conf/config.yml`).

```
entities:
  - "../vendor/roadiz/roadiz/src/Roadiz/Core/Entities"
  - "../vendor/roadiz/models/src/Roadiz/Core/AbstractEntities"
  - "gen-src/GeneratedNodeSources"
  - "../themes/MyTheme/Entities"
```

Verify if everything is OK by checking migrations:

```
bin/roadiz orm:schema-tool:update --dump-sql;
```

If you see your entities being created and no system database erased, just apply your migration with `--force`. If Doctrine send some error, you probably need to clear metadata cache:

```
bin/roadiz cache:clear -e prod;
```

Clearing cache from command line **will not empty op-code cache**. Be sure to call `clear_cache.php` entry point to actually clear *PHP-FPM* related caches. You can use an `curl` command if your website is accessible from *localhost*:

```
curl http://localhost/clear_cache.php;
```

Add back-office entry

At first, create a controller into your theme folder, for example `themes/MyTheme/AdminControllers/AdminController`.

Example:

```
namespace Themes\MyTheme\AdminControllers;

use Themes\Rozier\RozierApp;
use Themes\MyTheme\MyThemeApp;
use Symfony\Component\HttpFoundation\Request;

class AdminController extends RozierApp
{
    public function listAction(
        Request $request
    ) {
        return $this->render(
            'admin/test.html.twig',
            $this->assignation,
            null,
            MyThemeApp::getThemeDir()
        );
    }
}
```

If you look at this exemple you can see the class extends `RozierApp` not your `MyThemeApp` class! This will enable you to “inject” your code into Rozier Back-stage DOM and Style. But be careful to use `MyThemeApp::getThemeDir()` as your template namespace.

Now let’s have a look to your twig template file `admin/test.html.twig`.

```
{% extends '@Rozier/layout.html.twig' %}

{% block customStyles %}
<style>
    /* Custom styles here */
</style>
{% endblock %}

{% block customScripts %}
<script>
    /* Custom Stripts here */
</script>
{% endblock %}

{% block content %}
<section class="content-global add-test">
    <header class="content-header header-test header-test-edit">
        <h1 class="content-title test-add-title">{% trans %}Test admin{% endtrans %}</h1>
    </header>
```

```

<article class="content content-test">
    <p>This page is created from MyTheme to show you how to extend backoffice_
    ↳features.</p>
</article>
</section>
{% endblock %}

```

The first line is for inheriting from Rozier base template, you can notice that we explicitly choose `@Rozier` namespace.

The two next blocks are made for you to add some CSS or Javascript. For CSS, the block `customStyle` can be use to link an external file with a `<link>` tag, the path must be something like that `{{ asset('static/css/customstyle.css', 'MyTheme') }}`, or add directly some CSS with “`<style>`” tag. For JS, the block `customScripts` work as is, just link an external JS file or write your `<script>` tag.

Then create your own content, do not hesitate to give a look at Rozier back-stage theme Twig files to use the right DOM structure. For simple features, you wouldn’t have to extend JS nor CSS if you follow the same HTML coding style.

Linking things together

Add the route in the theme `route.yml` file.

In this case the route will be:

```

adminTestPage:
    # Setting your path behind rz-admin will activate Firewall
    path: /rz-admin/test
    defaults:
        _controller: Themes\MyTheme\AdminControllers\AdminController::listAction

```

Inject your own entries in back-stage

The last thing to do is to add your new admin entry in the back-office menu.

Go to your `MyThemeApp.php` main class and override `setupDependencyInjection` method, or create it if it doesn’t exist.

```

public static function setupDependencyInjection(Container $container)
{
    parent::setupDependencyInjection($container);

    $container->extend('backoffice.entries', function (array $entries, $c) {

        /*
         * Add a customAdmin entry in your Backoffice
         */
        $entries['customAdmin'] = [
            'name' => 'customAdmin',
            'path' => $c['urlGenerator']->generate('adminTestPage'),
            'icon' => 'uk-icon-cube',
            'roles' => null,
            'subentries' => null
        ];

        return $entries;
    });
}

```

Do not forget to add `use Pimple\Container;` in your file header.

`setupDependencyInjection` method is called statically at boot time when Roadiz's kernel is running all available Themes to setup services. In the code above, you will extend `backoffice.entries` service which define every buttons available in Rozier backstage main-menu.

If you want to have a category and sub-entries, just change the path at null value and create your subentries array as described in the next example:

```
$entries['customAdmin'] = [
    'name' => 'customAdmin',
    'path' => null,
    'icon' => 'uk-icon-cube',
    'roles' => null,
    'subentries' => [
        'customAdminPage' => [
            'name' => 'customAdmin page',
            'path' => $c['urlGenerator']->generate('adminTestPage'),
            'icon' => 'uk-icon-cube',
            'roles' => null
        ],
        // Add others if you want
    ]
];
```

You can restrict buttons to users with specific roles. Just replace `'roles' => null` with `'roles' => array('ROLE_ACCESS_NODES')`. You can even create your own roles to take full power of Roadiz extension system.

Warning: Adding roles in `backoffice.entries` service will only restrict buttons display in Rozier backstage interface. To really protect your controllers from unwanted users add `$this->validateAccessForRole('ROLE_ACCESS_MY_FEATURE');` at the first line of your back-office controller's actions. This will kick non-granted users from your custom back-office parts. Give a look at Rozier theme controllers to see how we use it.

4.1.2 Events

Roadiz node system implements several events. So you will be able to create and inject your own event subscribers inside *Roadiz* dispatcher.

To understand how the event dispatcher works, you should read the [Symfony documentation](#) at before.

Nodes events

- `RZ\Roadiz\Core\Events\Node\NodeCreatedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodeUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodeDeletedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodeUndeletedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodeDuplicatedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodePathChangedEvent::class`
- `RZ\Roadiz\Core\Events\Node\NodeTaggedEvent::class`: This event is triggered for tag and un-tag action.
- `RZ\Roadiz\Core\Events\Node\NodeVisibilityChangedEvent::class`: This event is triggered each time a node becomes visible or invisible.

- `RZ\Roadiz\Core\Events\Node\NodeStatusChangedEvent::class`: This event is triggered each time a node status changes.

Each node event object contains the current Node entity. You will get it using `$event->getNode()`.

NodesSources events

`RZ\Roadiz\Core\Events\NodesSourcesEvents`

- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesCreatedEvent::class`
- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesPreUpdatedEvent::class`: This event is dispatched BEFORE entity manager FLUSHED.
- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesUpdatedEvent::class`: This event is dispatched AFTER entity manager FLUSHED.
- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesDeletedEvent::class`

Each node-source event object contains the current NodesSources entity. You will get it using `$event->getNodeSource()`.

- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesIndexingEvent::class`: This event type is dispatched during Solr indexation. Your event will be `\RZ\Roadiz\Core\Events\FilterSolariumNodeSourceEvent` and it will allow you to alter or improve your Solr index according to your node-source type.

Note: You will find a simple subscriber example in Roadiz back-office theme which is called `Themes\Rozier\Events\SolariumSubscriber`. This subscriber is useful to update or delete your *Solr* index documents against your node-source database.

- `RZ\Roadiz\Core\Events\NodesSources\NodesSourcesPathGeneratingEvent::class`: This event type is dispatched when the node-router generate a path for your node-source using `{{ path() }}` Twig method or `$this->get('urlGenerator')->generate()` controller method. The default subscriber will generate the complete hierarchical path for any node-source using their identifier (available url-alias or node' name).

Tags events

- `RZ\Roadiz\Core\Events\Tag\TagCreatedEvent::class`
- `RZ\Roadiz\Core\Events\Tag\TagUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\Tag\TagDeletedEvent::class`

Each tag event object contains the current Tag entity. You will get it using `$event->getTag()`.

Folders events

- `RZ\Roadiz\Core\Events\Folder\FolderCreatedEvent::class`
- `RZ\Roadiz\Core\Events\Folder\FolderUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\Folder\FolderDeletedEvent::class`

Each folder event object contains the current Folder entity. You will get it using `$event->getFolder()`.

Translations events

- `RZ\Roadiz\Core\Events\Translation\TranslationCreatedEvent::class`
- `RZ\Roadiz\Core\Events\Translation\TranslationUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\Translation\TranslationDeletedEvent::class`

Each folder event object contains the current Translation entity. You will get it using `$event->getTranslation()`.

UrlAlias events

- `RZ\Roadiz\Core\Events\UrlAlias\UrlAliasCreatedEvent::class`
- `RZ\Roadiz\Core\Events\UrlAlias\UrlAliasUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\UrlAlias\UrlAliasDeletedEvent::class`

Each folder event object contains the current UrlAlias entity. You will get it using `$event->getUrlAlias()`.

User events

- `RZ\Roadiz\Core\Events\User\UserCreatedEvent::class`
- `RZ\Roadiz\Core\Events\User\UserUpdatedEvent::class`
- `RZ\Roadiz\Core\Events\User\UserDeletedEvent::class`
- `RZ\Roadiz\Core\Events\User\UserDisabledEvent::class`
- `RZ\Roadiz\Core\Events\User\UserEnabledEvent::class`
- `RZ\Roadiz\Core\Events\User\UserPasswordChangedEvent::class`

Each folder event object contains the current User entity. You will get it using `$event->getUser()`.

4.1.3 Extending Solr indexation

How to index page blocks contents

If all your text content is written in *block nodes* instead of reachable *pages*, you should index them into your page Solr documents to improve your search engine relevancy.

You can use the `NodesSourcesIndexingEvent::class` event to enhance your node indexing data before it's persisted into *Solr* engine (especially `collection_txt` field):

```
<?php
declare(strict_types=1);

namespace Themes\MyTheme\Event;

use GeneratedNodeSources\NSGroupBlock;
use GeneratedNodeSources\NSPage;
use Pimple\Container;
use RZ\Roadiz\Core\ContainerAwareInterface;
use RZ\Roadiz\Core\ContainerAwareTrait;
use RZ\Roadiz\Core\Entities\NodesSources;
use RZ\Roadiz\Core\Events\NodesSources\NodesSourcesIndexingEvent;
use RZ\Roadiz\Core\SearchEngine\SolariumFactoryInterface;
use RZ\Roadiz\Core\SearchEngine\SolariumNodeSource;
use Symfony\Component\EventDispatcher\EventSubscriberInterface;
```



```

final class PageIndexingEventSubscriber implements EventSubscriberInterface,
↳ContainerAwareInterface
{
    use ContainerAwareTrait;

    public function __construct(Container $container)
    {
        $this->container = $container;
    }

    /**
     * @inheritDoc
     */
    public static function getSubscribedEvents()
    {
        return [
            NodesSourcesIndexingEvent::class => ['onIndexing'],
        ];
    }

    public function onIndexing(NodesSourcesIndexingEvent $event)
    {
        $nodeSource = $event->getNodeSource();
        if ($nodeSource instanceof NSPage || $nodeSource instanceof NSGroupBlock) {
            $assoc = $event->getAssociations();

            /*
             * Fetch every non-reachable blocks
             * to gather their text content in master page document
             */
            $children = $this->container['nodeSourceApi']->getBy([
                'node.nodeType.reachable' => false,
                'node.visible' => true,
                'translation' => $nodeSource->getTranslation(),
                'node.parent' => $nodeSource->getNode(),
            ]);

            /** @var NodesSources $child */
            foreach ($children as $child) {
                /** @var SolariumNodeSource $solarium */
                $solarium = $this->container[SolariumFactoryInterface::class]->
↳createWithNodesSources($child);
                // Fetch all fields array association AS sub-resources (i.e. do_
↳not index their title)
                $childAssoc = $solarium->getFieldsAssoc(true);
                $assoc['collection_txt'] = array_merge(
                    $assoc['collection_txt'],
                    $childAssoc['collection_txt']
                );
            }

            $event->setAssociations($assoc);
        }
    }
}

```

Then register this subscriber to your event-dispatcher:

```

# In your theme ServiceProvider...
$container->extend('dispatcher', function (EventDispatcherInterface $dispatcher,
↳Container $c) {
    $dispatcher->addSubscriber(new PageIndexingEventSubscriber($c));
}

```

```
    return $dispatcher;  
});
```

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