



Using Gatsby and Netlify CMS

Build Blazing Fast JAMstack Apps
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Joe Attardi

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Printed on acid-free paper

To Liz and Benjamin – you are my whole world.

Table of Contents

- About the Author xi
- About the Technical Reviewer xiii
- Acknowledgments xv
- Introduction xvii
- Chapter 1: Introduction to Netlify CMS 1
 - The JAMstack 1
 - About Netlify 2
 - What is a CMS? 3
 - Traditional CMS 3
 - Headless CMS 4
 - Netlify CMS 5
 - Backends 6
 - How it works 7
 - Local development 9
 - Widgets 9
 - Previews 11
 - Summary 12
- Chapter 2: Gatsby Crash Course 13
 - What is Gatsby? 13
 - Creating pages 13
 - GraphQL and Gatsby 14
 - The GraphQL tool 15
 - Query types 16
 - Page queries 16
 - Static queries 17

TABLE OF CONTENTS

- Plugins 19
 - Source plugins..... 19
 - Transformer plugins 20
 - Other plugins 22
- Dynamic page creation 22
- Markdown primer 23
 - Basic formatting 24
 - Front matter..... 24
- Gatsby starters..... 25
- The build process..... 25
 - Data model and GraphQL schema creation 26
 - Page creation 26
 - Query extraction 26
 - Query execution..... 26
 - Static HTML generation 26
- Summary..... 27
- Chapter 3: Setting Up the Example Project..... 29**
 - Prerequisites 29
 - Install Git 29
 - Install Node.js 29
 - Install the Gatsby command line interface 30
 - Sign up for GitHub 30
 - Create a new repository with the starter code 30
 - Clone the repository 31
 - Install dependencies and test it out..... 32
 - Deploy on Netlify 33
 - Sign up 33
 - Create a new site..... 35
 - A tour of the example project..... 41
 - Directory structure 41
 - The Layout component..... 42

CSS modules	42
Special Gatsby files	43
Summary.....	44
Chapter 4: Setting Up Netlify CMS	45
Install dependencies	45
Configuration.....	45
YAML primer	46
Creating the initial configuration	47
Collections	48
Folder collections	48
Filtered folder collections.....	48
File collections.....	48
Configuring the blog collection	49
More about fields.....	50
Add the Gatsby plugin	50
Commit and deploy	51
Configure Netlify Identity and Git Gateway	51
More about Netlify Identity	54
Summary.....	55
Chapter 5: The Netlify CMS Application.....	57
Registering and logging in	57
Creating a new blog post	59
Publishing the post.....	62
How publishing works.....	64
Adding media	65
Alternative media storage options.....	66
Adding media to a blog post	67
Inserting the image	67
Publishing the updated blog post.....	69
Summary.....	70

TABLE OF CONTENTS

Chapter 6: Sourcing Blog Data 71

 Gatsby plugin configuration 71

 Making Gatsby aware of the Markdown files..... 71

 Parsing the Markdown data..... 73

 Querying and displaying the data 74

 Creating a blog post component 75

 Creating a blog list component and querying for data 76

 Using the BlogList component..... 77

 Adding a second blog post..... 79

 Fixing the sort order..... 81

 Summary..... 83

Chapter 7: Dynamic Page Creation 85

 Gatsby Node APIs 85

 onCreateNode..... 85

 createPages..... 86

 Adding the slug to the blog post data 86

 Dynamically creating the blog post pages 87

 Creating the blog post template 88

 Creating the pages 90

 Linking to the dynamically generated pages 92

 The Gatsby Link component 94

 One last tweak 96

 Summary..... 98

Chapter 8: Blog Pagination 99

 How pagination works 99

 Creating some new blog entries 100

 Dynamically creating the blog list pages 100

 Creating the blog list template page 103

 Adding a link to the new blog list page..... 108

Updating the index page	110
Summary.....	112
Chapter 9: Adding More Content	113
The contentKey field	114
Creating a pages collection.....	121
Adding the index page data	123
Adding another filesystem source	125
Using the CMS content in the index page	126
Summary.....	129
Chapter 10: Creating the Coffee Menu.....	131
Nested lists	131
Defining the menu page.....	131
Adding menu items	134
Building the menu page	139
Ease of maintenance	146
Summary.....	147
Chapter 11: Working with Images	149
Plugins	149
Adding the plugins to the Gatsby configuration	150
How gatsby-transformer-sharp works.....	154
GraphQL fragments	155
Using the BackgroundImage component.....	157
Disabling the “blur-up” effect	159
Fixing the header background	160
Moving the image.....	160
Modifying the Layout component to use a static query	160
The gatsby-image package.....	163
Summary.....	163

TABLE OF CONTENTS

Chapter 12: Customizing the CMS 165

 Customizing Netlify CMS..... 166

 Updating the plugin configuration 166

 Adding a custom menu preview 168

 Refactoring the menu page 168

 Creating the preview component 169

 Opening the local CMS instance..... 171

 Refactoring the menu page again 172

 Updating the preview component 175

 Previewing the menu data..... 176

 Summary..... 179

Chapter 13: The Editorial Workflow..... 181

 Enabling the editorial workflow 181

 Adding some new content 184

 Viewing the pull request 185

 Viewing the preview 187

 Updating the status..... 188

 Finishing up 190

 Summary..... 192

Chapter 14: Wrap Up..... 193

 Further learning 193

 Integration with other frameworks..... 194

 Netlify Identity OAuth..... 194

 Beta features 194

 Netlify CMS resources..... 195

Index..... 197

About the Author



Joe Attardi is a software engineer specializing in front-end development. He has over 15 years' experience working with JavaScript, HTML, and CSS and has worked extensively with front-end technologies such as Angular and React. He currently works at Salesforce and has worked in the past with companies such as Dell and Nortel. He is also the author of *Modern CSS*, an Apress title. He lives in the Boston area with his wife and son. You can find him on Twitter at @JoeAttardi.

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Introduction

In this book, you will learn all about creating a website using Gatsby, getting its content from Netlify CMS, a free content management system from Netlify. We'll start with a bare-bones template project and install and configure Netlify CMS from scratch.

In Chapter 1, we'll look at the JAMstack and what a content management system is. We'll talk about headless CMSs and introduce Netlify CMS.

Chapter 2 is a Gatsby crash course. If you have built a site with Gatsby before, you can probably skip this chapter, as it is a very basic overview of Gatsby. Conversely, if you haven't been exposed to Gatsby before, this introduction should be enough to get you going.

We'll start setting up the example project, a coffee shop website, in Chapter 3. We'll take care of signing up for GitHub and Netlify if you haven't already and also get your version of the example project deployed on Netlify.

In Chapter 4, we'll start adding Netlify CMS to the project. This covers installation of the CMS and creation of the configuration file. We'll set up the blog content and integrate with the Netlify identity service.

In Chapter 5, we'll take a tour of the CMS user interface, and create our first piece of content: a blog post. We'll also look at how to add images to blog posts.

We'll take the content created by the CMS and start integrating that with Gatsby in Chapter 6. We'll configure some Gatsby plugins which will add the blog content to Gatsby's data model.

Chapter 7 is all about creating pages from data. It will introduce the Gatsby Node APIs and show how Gatsby dynamically creates pages by combining data with a page template.

Eventually, we'll end up with too much blog data to show on a single page, so in Chapter 8, we'll learn how to paginate the blog posts. We'll split the blog post listing into several pages (which are also dynamically created).

INTRODUCTION

Up to now, the content on the landing page, such as the hero image and tagline, is managed in the source code. Chapter 9 will explore how to make this content dynamic and editable from Netlify CMS. We'll make several elements of the landing page configurable from the CMS, allowing the page content to be updated without writing a line of code.

In Chapter 10, we'll create a menu for the coffee shop. We'll create new content definitions in the CMS configuration for menu categories, items, and prices.

Gatsby has some plugins that can help generate more efficient images to improve page load time. We'll look at how to do this in Chapter 11.

In Chapter 12, we'll see how we can customize the CMS user interface, extending it with a custom preview component so that we can see a live preview of how the menu looks from within the CMS.

Finally, in Chapter 13, we'll look at how to leverage Netlify CMS's editorial workflow, creating draft content and reviewing it via GitHub pull requests.

We'll close the book in Chapter 14 with some discussion of Netlify CMS beta features and pointers to more Netlify CMS resources.

CHAPTER 1

Introduction to Netlify CMS

Before we dive into the specifics about Netlify CMS, let's look at a few introductory topics. These include the JAMstack, the Netlify service, and content management systems in general. From there, we'll start looking at Netlify CMS itself.

The JAMstack

Traditional web application stacks such as LAMP (Linux, Apache, MySQL, PHP) or MEAN (MongoDB, Express, Angular, Node.js) specify particular server platforms, programming languages, and database vendors.

JAMstack - that's JavaScript, APIs, and Markup - is a new paradigm for building fast web applications. It is technology-and tool-agnostic. A JAMstack site might be powered by JavaScript via Gatsby or by Ruby via Jekyll.

A JAMstack site pre-renders its pages to static HTML markup which can be served from a CDN or other hosting service. These pages contain JavaScript to provide interactivity, which loads data from an API of some kind. In this model, the application is decoupled from its data.

The API could be a backend service deployed separately, or it could be a third-party service like a headless CMS or a set of AWS Lambda functions.

Figure 1-1 shows an overview of the JAMstack architecture.

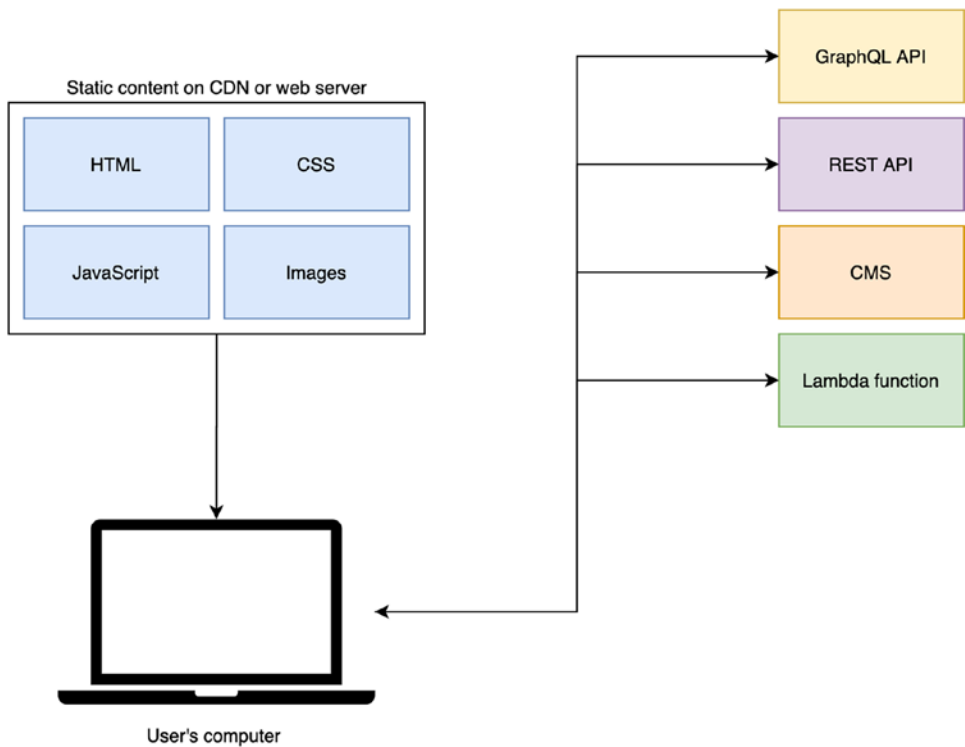


Figure 1-1. *The JAMstack*

One of the biggest benefits of using the JAMstack is performance. Because the pages are generated ahead of time and deployed as static HTML, there is no dynamic generation of HTML from a server and no wait for server-side code to execute. Instead, these static resources can be served from a lightning-fast content delivery network (CDN). By using a CDN, assets are served to a visitor from a server geographically close to them.

There can also be cost savings. Serving your static assets from a CDN is likely less expensive than maintaining your own server infrastructure.

About Netlify

Netlify (<https://netlify.com>) is a popular platform for hosting websites and applications. At its core, it is a hosting service but also has many other powerful features such as analytics, serverless functions, forms, and a CDN. They have a generous free tier of services.

Netlify's workflow is based on Git repositories. A site is created by connecting a repository from a service like GitHub or GitLab. When a new commit is pushed, Netlify will build and deploy a new version of the site. For this reason, the Netlify platform is well suited to building JAMstack applications.

In this book, we will build and deploy the example project on the Netlify platform.

What is a CMS?

As a web developer, it is easy to build web content by just writing HTML and CSS (or, in the case of Gatsby as we'll see later, Markdown). But consider a nonprofit organization that hires a developer to build a website for them. Unless someone at the nonprofit knows how to code, they will have to spend more money by having the developer come back every time they need the site updated.

A content management system, or CMS, is a solution to this problem. Instead of the content being written in source code, the CMS provides a rich editing experience for authoring and maintaining content. Some features of a CMS might include a WYSIWYG (What You See Is What You Get) editor or a media library for managing images and other media.

A CMS allows multiple authors to draft, edit, and publish content to the site, all without having to worry about writing markup or code. It's also easier because content can be edited directly in the web browser.

A CMS can be used to manage multiple types of content on a site. The most common type of content that comes to mind is an article or blog post. However, a CMS can even be used to provide content on a landing page, header, or footer as well.

Traditional CMS

A traditional CMS is a large web application that handles both the management and display of the content. The content is typically stored in a database of some kind. An author logs in via a web interface, edits the content, and it is saved to the database.

A visitor to the site will utilize the same application to view the content. It retrieves the content from the database where it is presented to the user.

Figure 1-2 shows an overview of a traditional CMS platform.

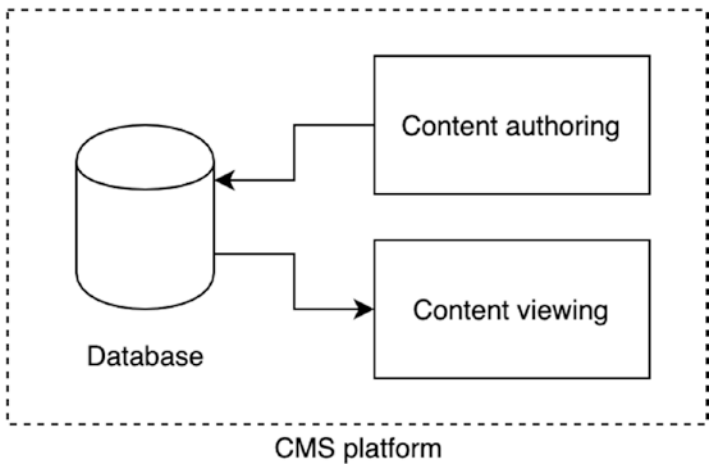


Figure 1-2. *The architecture of a traditional CMS*

Some examples of traditional CMS platforms are WordPress, Drupal, and Joomla.

Headless CMS

A headless CMS is a platform for authoring content but does not contain a front-end interface for displaying that content. Instead, the content is exposed through an API of some kind.

The primary benefit of a headless CMS is that since the content is delivered via an API, it can be consumed by multiple front-end applications. It also provides greater flexibility in how the content is presented. A traditional CMS may be highly customizable, but you are still locked into the platform.

Figure 1-3 shows a typical headless CMS.

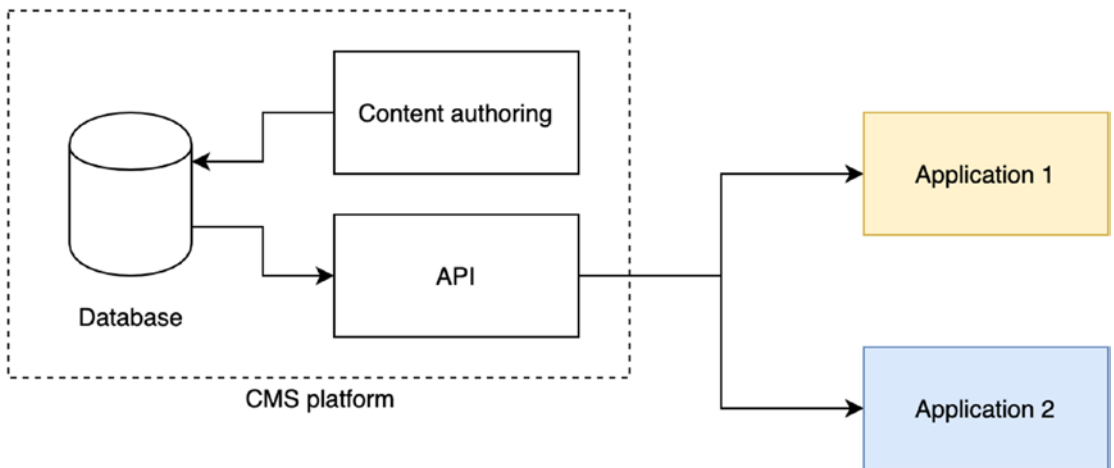


Figure 1-3. *The architecture of a headless CMS platform*

Some examples of headless CMS platforms are Contentful, Magnolia, and Netlify CMS.

As you can probably tell, a headless CMS is a perfect choice for a JAMstack application due to its decoupled, API-first nature. We can build an entire site around the API, using it as a data source for our content.

One potential drawback of a headless CMS is that you may not be able to see a preview of how the content will look on the live site. Fortunately, Netlify CMS supports custom previews, which solves this particular problem.

Netlify CMS

Netlify CMS is a free, open source headless CMS created by Netlify. Despite its name, it is not locked to the Netlify platform. While it is much easier to build and deploy a Netlify CMS-powered site on Netlify, it is not required.

Some CMS platforms store their data in databases that are accessed via an API. Netlify CMS takes a simpler approach. The content is stored as images and Markdown files in a Git repository. This makes it an ideal partner with Gatsby, which has plugins for working directly with, and rendering, Markdown data. It should be noted that Netlify CMS works with other site generators and platforms as well.

Netlify CMS provides a React single-page application with a rich text editor so that content creators don't have to write Markdown directly. While the user interface is powered by React, it can be used with a site built with any technology. Netlify CMS can be used with any platform, such as Hugo, Jekyll, Nuxt, as well as Gatsby.

Backends

Netlify CMS supports several different backends for storing its data. These different backends also provide authentication mechanisms for logging into the CMS. Some of these backends include GitHub, GitLab, and Bitbucket. For these three backends, a user can log in using their GitHub, GitLab, or Bitbucket account, respectively.

Another backend (and the one we will use in this book) is the Git Gateway backend. This is a Netlify-provided backend that does not require the credentials to the user's Git provider. Instead, authentication is configured via the Netlify Identity service, which includes a basic application for managing users. At the time of writing, the Git Gateway backend is only supported for GitHub or GitLab repositories.

The Git Gateway backend is deployed with your site on Netlify under a directory called `.netlify` which contains a basic set of APIs for creating the Git commits. When new content is added, the browser calls these APIs which have some server-side code which will communicate with the configured Git provider's API to create the new Git commit.