

Configuration Manual

MSc Research Project
MSc in Cloud Computing

Arnauv Kaushik
Student ID : x19231661

School of Computing
National College of Ireland

Supervisor: Jitender Kumar Sharma

Student Name:	Arnav Kaushik
Student ID:	x19231661
Programme:	MSc Cloud Computing
Year:	September 2020
Module:	MSc Research Project
Supervisor:	Jitender Kumar Sharma
Submission Due Date:	16th August 2021
Project Title:	A CloudFormation template using AWS golden standards to avoid cascading failures in hardware
Word Count:	1046
Page Count:	8

1 Pre-requisite and components required

Anyone familiar with cloud computing core components can understand the main idea and can thus follow the steps comfortably. Being familiar with AWS basics is recommended so that anyone can relate to terms and cloud services being mentioned.

The main components worth a read/revision are :

- Cloud/ AWS
- Management Console
- CloudFormation
- S3 (Simple Storage Service)
- Miscellaneous - EC2, RDS, Elastic beanstalk

2 Setup

The first link to be used is **console.aws.amazon.com**. This is the starting point for us and also the heart of all web services from Amazon cloud.

In figure 1, everyone shall see different **recently visited services** as it solely depends on what services one has used and uses often.

- In the **search tab**, which is right at the top, type in **CloudFormation**. On clicking the search result, one should see figure 2.
- On clicking **Stacks**, one shall see the current amount of stacks running, empty in case of a first-timer.
- To begin creating a stack, we need to select the **Create stack** button, present at right corner. It shall have two options :

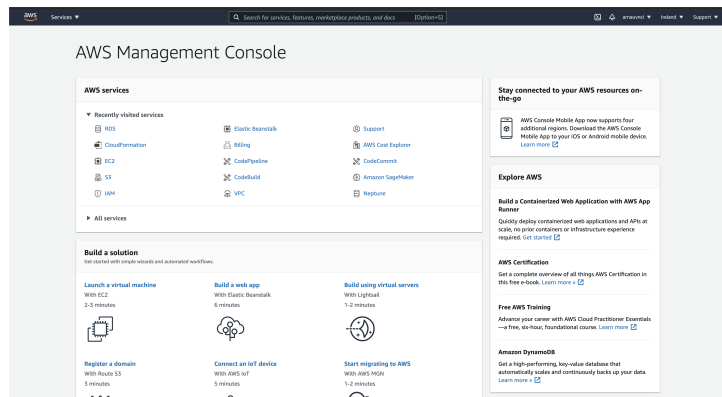


Figure 1: AWS Management Console

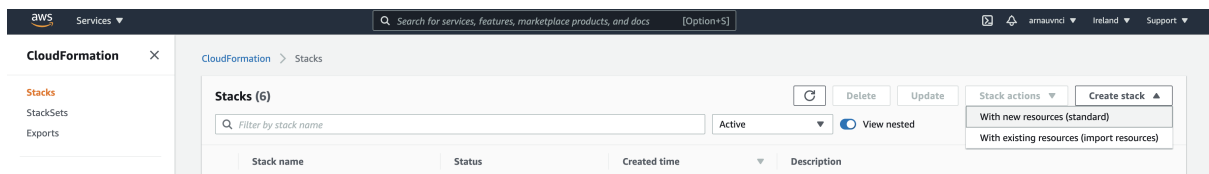


Figure 2: CloudFormation homepage

- With new resources(standard)
- With existing resources (import resources)
- Because we are creating a CloudFormation template from scratch for now, moreover, we will create cloud resources from the template itself, the first(standard) suits us for now.

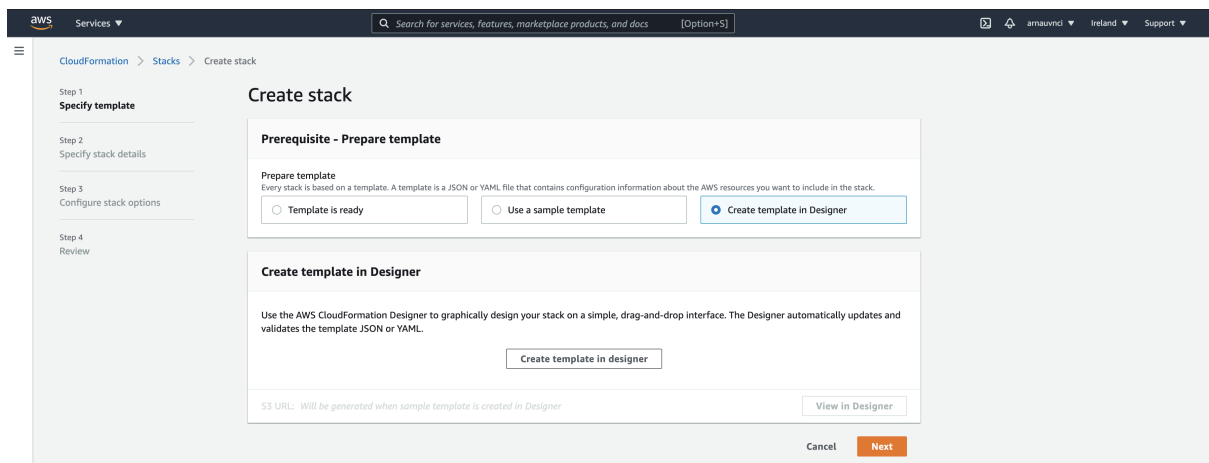


Figure 3: Stack Template choices

- As seen in figure 3, we will be given the following choices in order to create a template :
 - Template is ready - to be used in case one has a template ready beforehand.

- Use sample template - User can pick out of many pre-built CloudFormation templates provided by none other than AWS.
- Create template in designer - For full control of the template, the user can type in JSON or YAML format, or can drag-drop various cloud services for a better user-experience.
- Now, in order to create one from scratch, the manual demonstrates the approach to create template from scratch, option three is selected, we click **Next** to proceed.

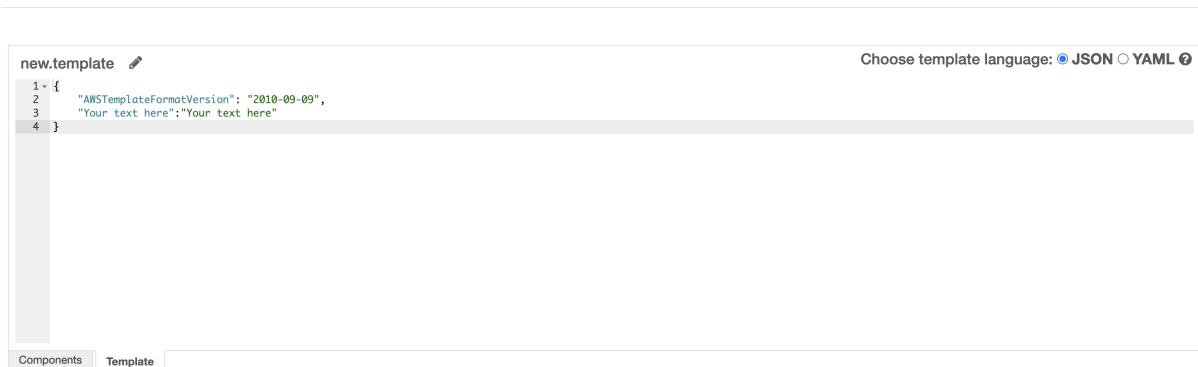


Figure 4: Writing the template

- Figure 4 shows a bare-minimum template provided to start working, the default name is new.template and the default language is JSON.
- There is a free choice whether to choose JSON or YAML, one can prefer YAML because it is comparably easier to understand and JSON uses curly braces strictly.
- On top of the screen, we have a drop-down menu under the folded-page icon as highlighted in figure 5.
- The save option is an important step, it is used to rename the template to name it in a unique and identifiable manner.
- Figure 6 is highlighted here because it has two choices alongside saving the template just created.
 - Local file - as the name suggests, this option, if selected, downloads and saves the template on the local machine being used to access the cloud account.
 - S3 Bucket - this option saves the current template as named by the user in a dedicated S3 bucket. The term 'dedicated' is used because a bucket is specially created to hold all CloudFormation templates thus created along with metadata such as timestamp of creation for easy differentiation.
- This manual proceeds with the second option, thus creating a dedicated bucket to hold CloudFormation templates.
- Now, we can see our template in a dedicated S3 bucket.

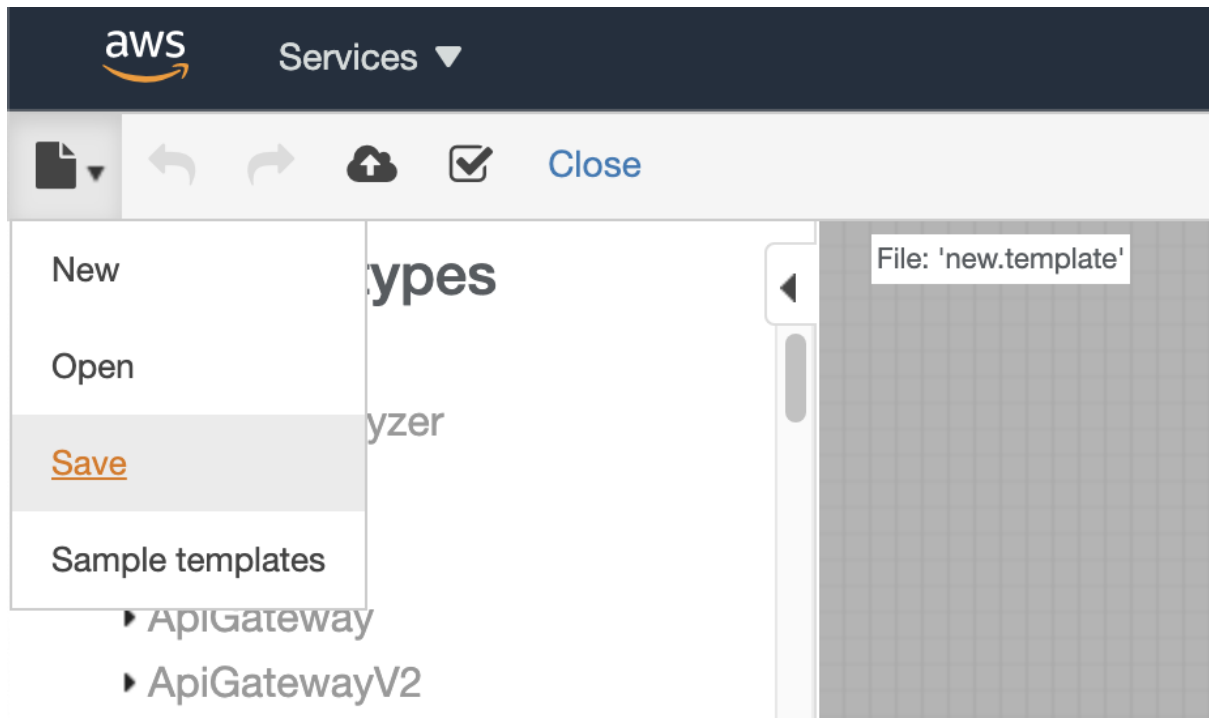


Figure 5: Save as

- Before we proceed to the bucket, it is highly recommended to perform the next step in a new tab.
- Open S3 the same way used for CloudFormation, open the AWS Management Console and then search for S3 and click on the search result to land on something similar to figure 7.
- A new tab is recommend because we already have CloudFormation open in the current tab, this manual requires accessing CloudFormation, S3 and miscellaneous services simultaneously and hence, separate tabs are highly recommended to save time and effort.
- In the new tab, open S3 and then open the newly auto-created S3 bucket which shall indicate that it has CloudFormation templates of a particular region.
- The current region is mention at the top-right position right between the username of the cloud user and the Support drop-down menu.
- Just to clarify in order to avoid any confusion, CloudFormation is a regional service and so like in figure 3, we can see Ireland in the manual.
- The same region name will be used in the name of the bucket by default, but please note that when accessing any S3 bucket, the region will always be **Global** as S3 is a global service.
- Continuing, we will be needing the **URL** of this template for a step down the line, in order to do so, we shall click the individual white checkbox present at left of every line item.

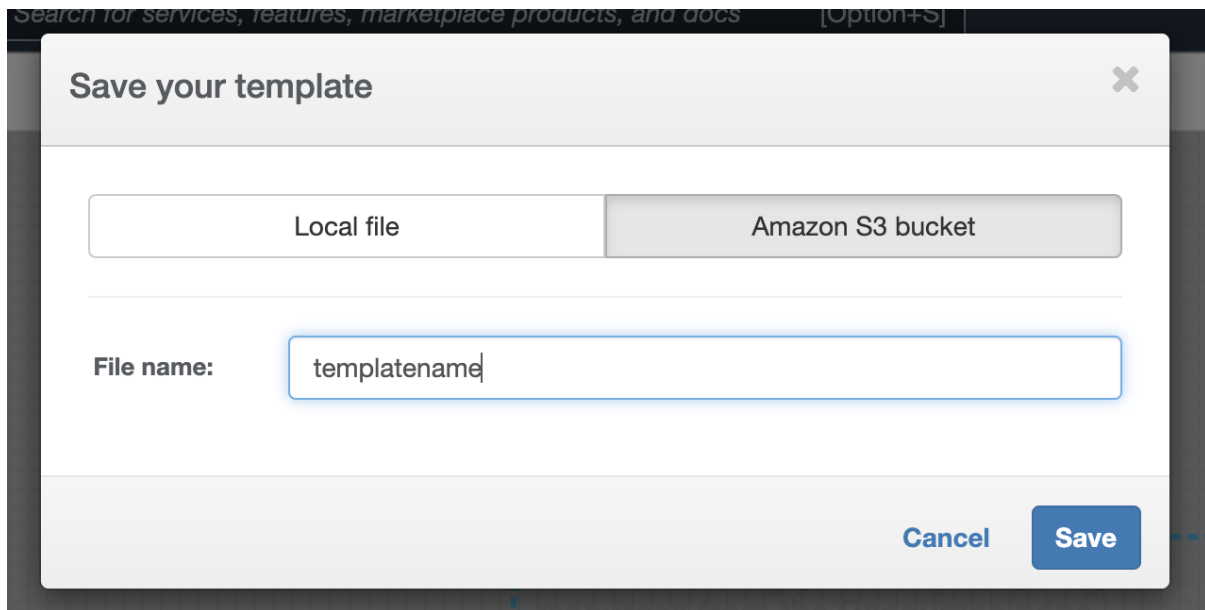


Figure 6: Naming template

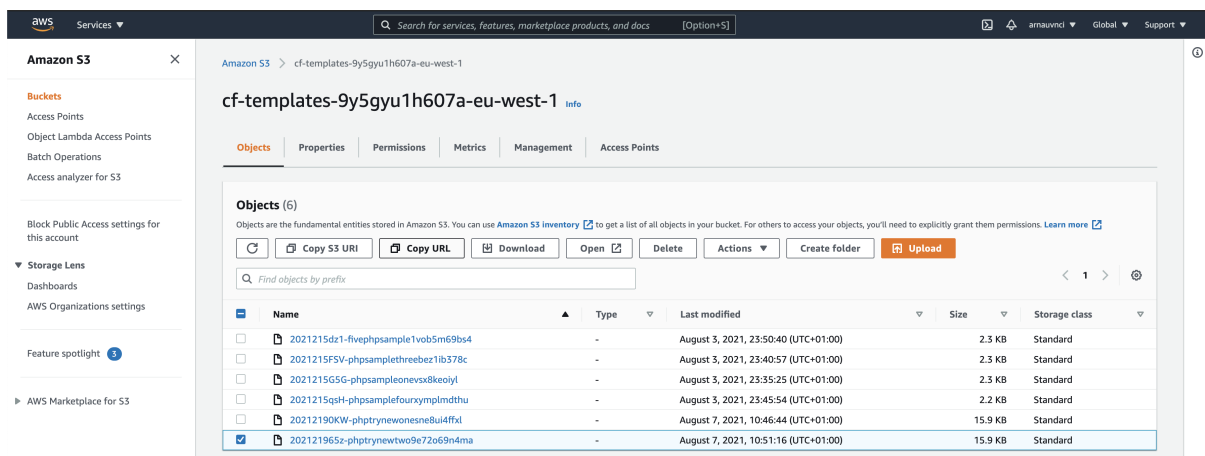


Figure 7: S3 bucket

- after checking our template, we need to click on the **Copy URL** button present above the line items or the bucket contents. Refer to figure 8.
- Return to CloudFormation, one can also open the same in a new tab to ensure the components are refreshed, if doing so on the existing CloudFormation tab, feel free to exit and return to main console as our template is safely stored.
- Now, instead of creating a template from scratch, we will be using the template we just created.
- Proceed with the **Create Stack** option.
- Select the first option to create new resources.
- We should be directed to a page looking similar to figure 10.

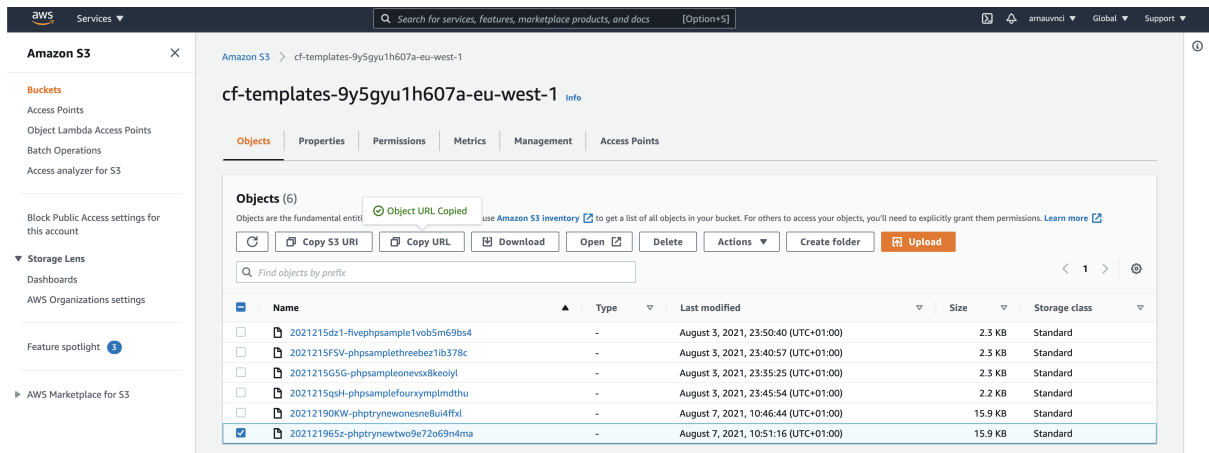


Figure 8: Copying URL of the template

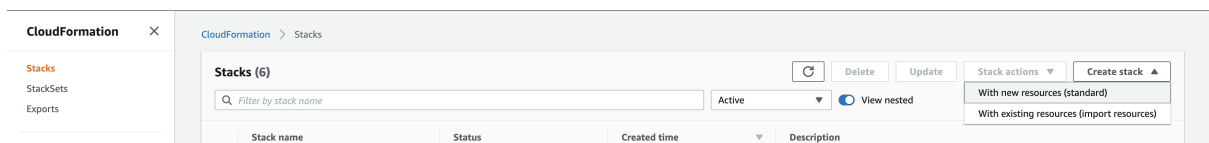


Figure 9: CloudFormation Home

- This time, we will select the first option namely **Template is ready** as we have our own template to refer to.
- In order to specify that very template, we will now choose a source for it, which is indeed our S3 bucket.
- Select **Amazon S3 URL** option.
- Paste the clipboard content where it asks to enter the S3 object URL.
- Click **Next**.

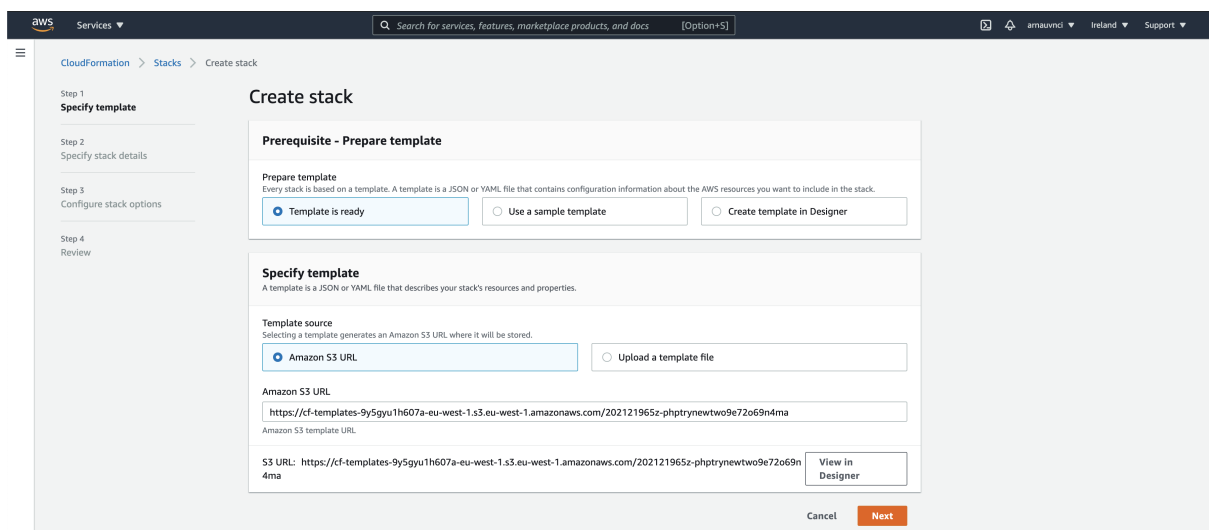


Figure 10: 'Template is ready' option

Figure 11: Stack details

- Now, here comes a critical step.
- Figure 11 is a relevant reference but this totally depends on what are the stack components, again, this is solely relies on the template created.
- As per stack created for the manual, we have an RDS instance, an EC2 instance, thus, it was mandatory to enter relevant details such as database username and password, so on, so forth.
- Click **Next** after entering the relevant details and then, we shall see a review page.
- Those who are familiar with creating an EC2 instance, figure 12 is similar to a final review just before creation.
- Click on **Create** to proceed with stack creation.

Finally, one can check the various cloud services/components if they are running and their current status, each and every service has its own dedicated page/URL and can be searched on the AWS Management Console.

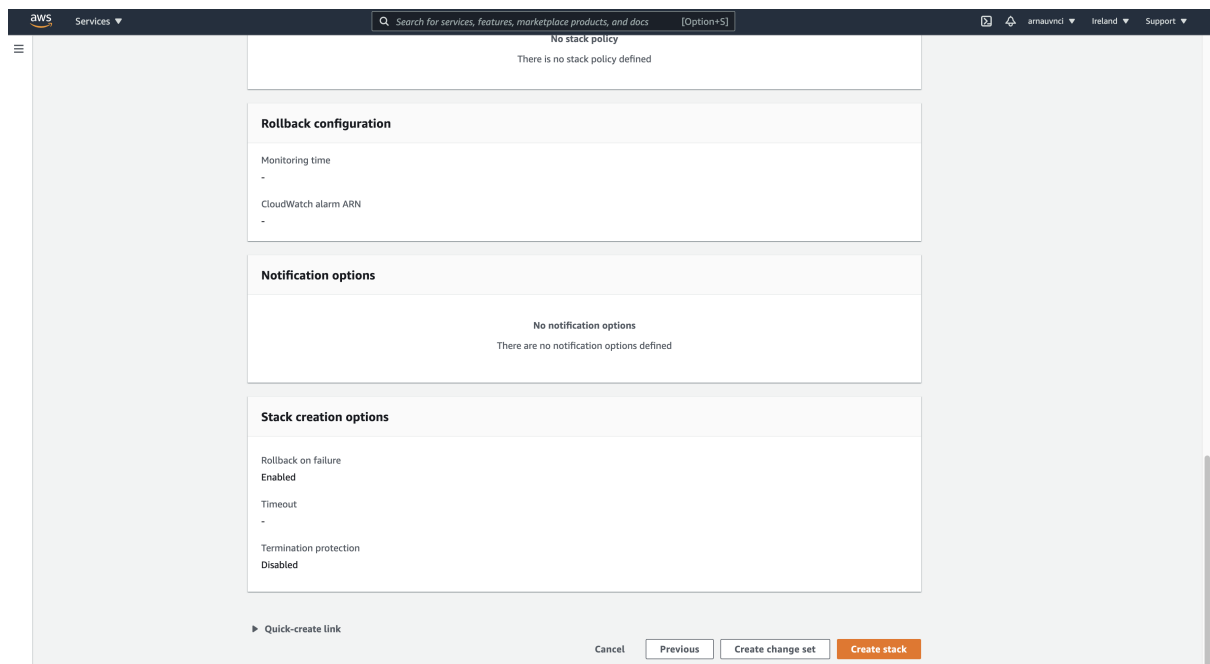


Figure 12: Stack review

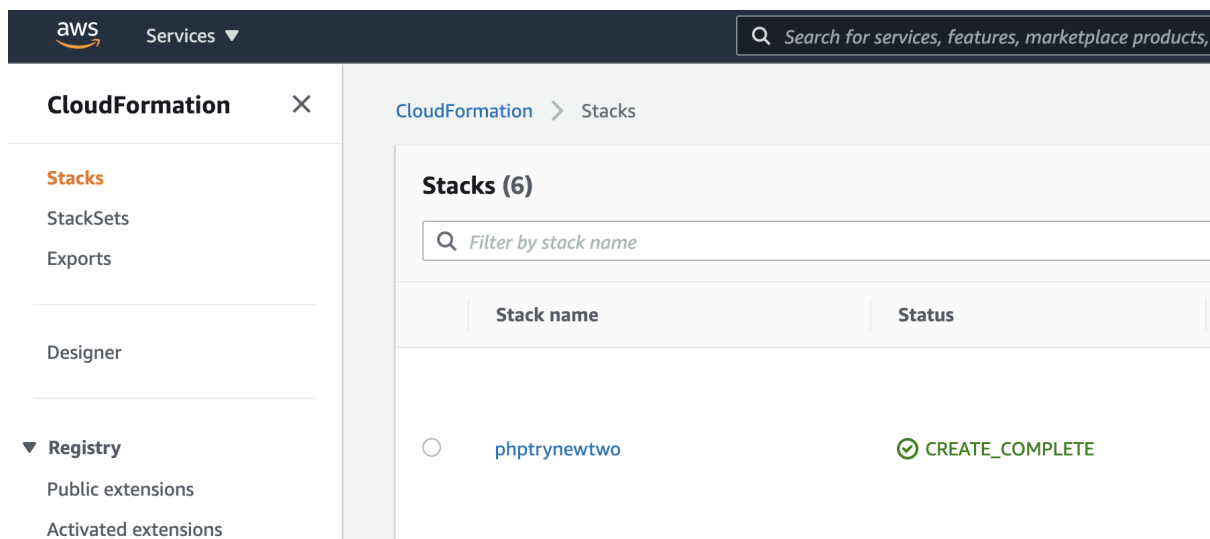


Figure 13: Stack-creation complete