amazon web services | Certified

Developer - Associate

lab

lab title

Programming and Deployment using AWS CloudFormation

V1.00

Course title

AWS Certified Developer Associate

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About the Lab

These lab notes are to support the instructional videos on Creating a DynamoDB Database using CloudFormation in the BackSpace AWS Certified Developer course.

In this lab we will:

- Develop a CloudFront template to launch a DynamoDB instance.
- Launch a CloudFormation stack from a template.
- Use the CloudFormer tool to create a template.

Please refer to the AWS JavaScript SDK documentation at:

http://s3.amazonaws.com/awsdocs/CF/latest/cf_dg.pdf

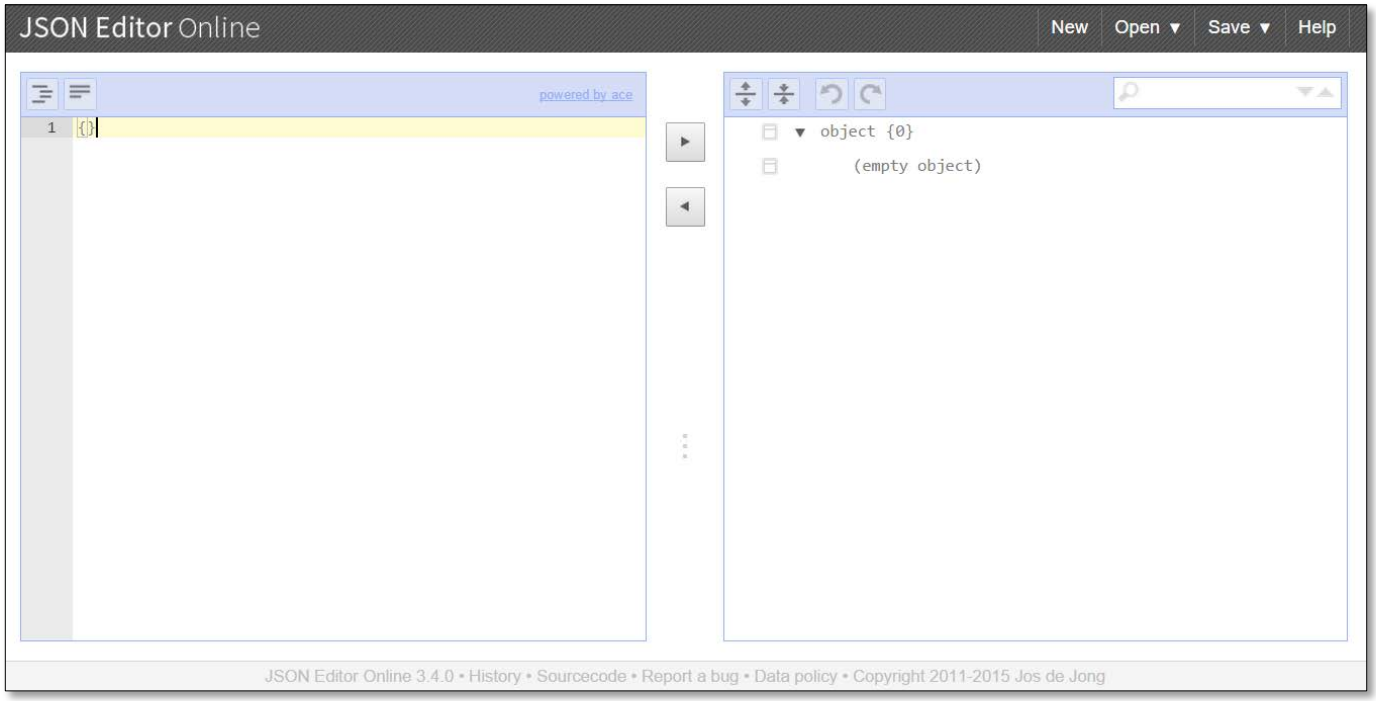
Please note that AWS services change on a weekly basis and it is extremely important you check the version number on this document to ensure you have the lastest version with any updates or corrections.

Develop a CloudFront template

In this section we will develop a CloudFront template using a JSON editor to launch a DynamoDB instance with pre-configured launch settings.

Open up the online JSON editor at http://jsoneditoronline.org/

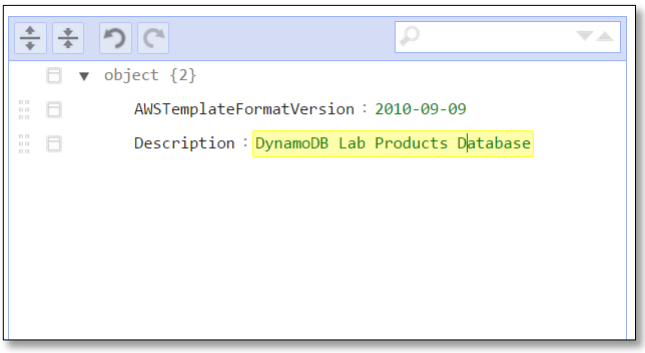
Create an empty object {}



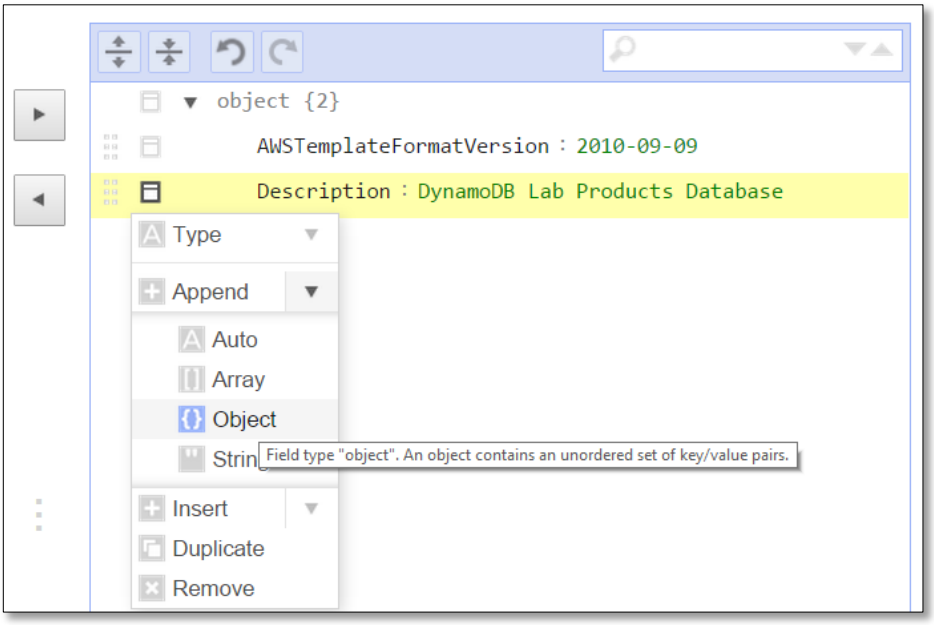
Append the following key pair to the object:

AWSTemplateFormatVersion : 2010-09-09

Description : DynamoDB Lab Products Database

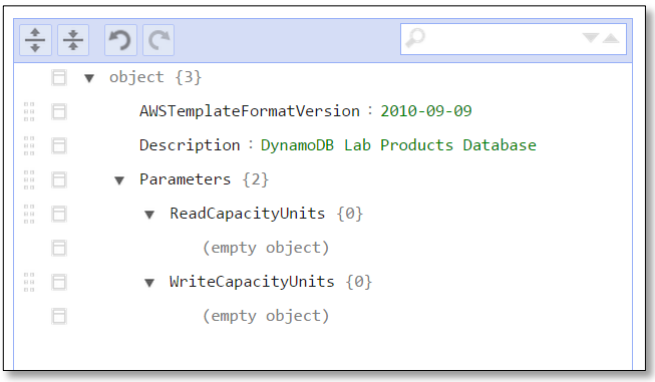


Now append an object called Parameters.



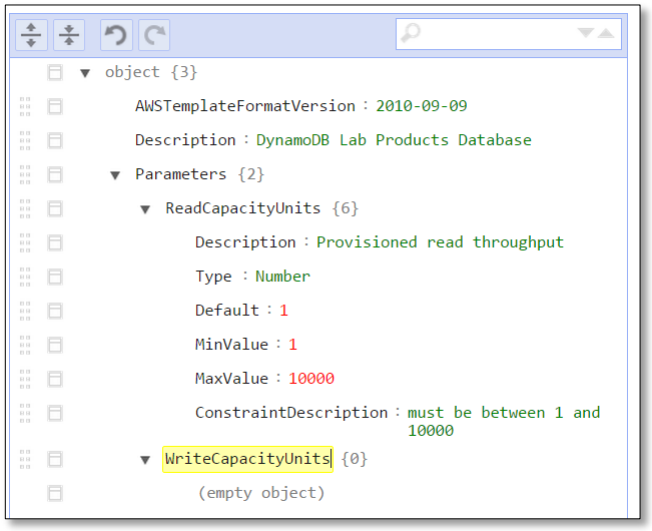
Append two objects to the Parameters object

- ReadCapacityUnits
- WriteCapacityUnits



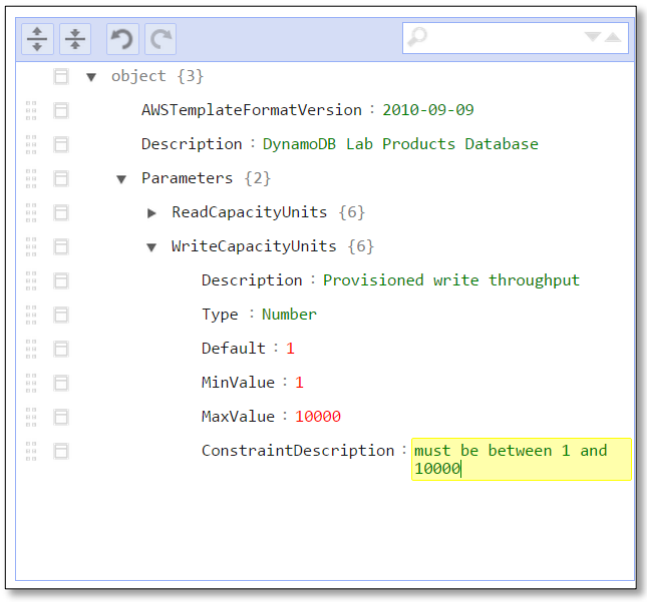
Append the following keys to the ReadCapacityUnits object:

- Description: Provisioned read throughput
- Type: Number
- Default: 1
- MinValue: 1
- MaxValue: 10000
- ConstraintDescription: must be between 1 and 10000

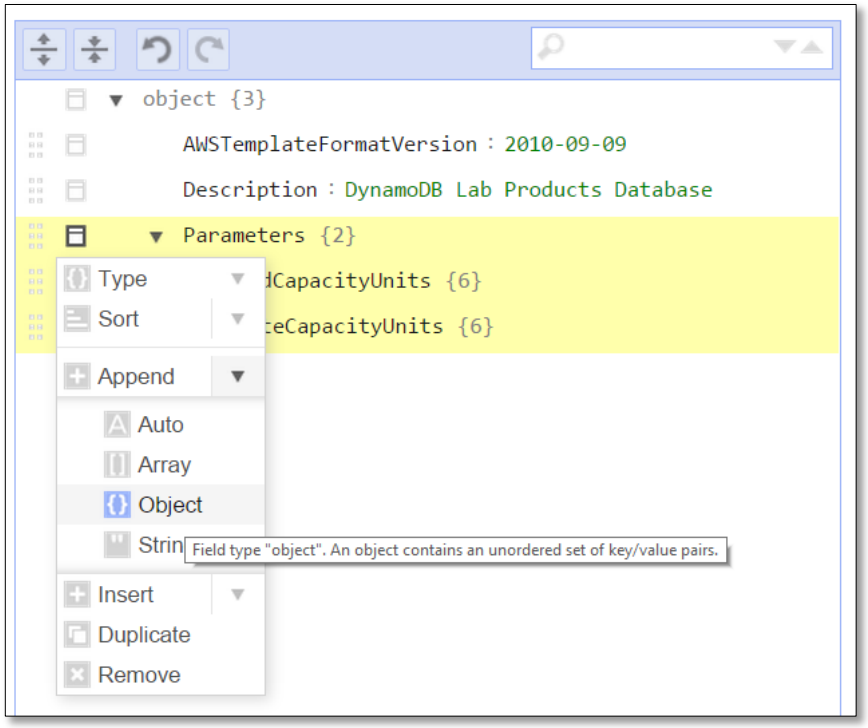


Append the following keys to the WriteCapacityUnits object:

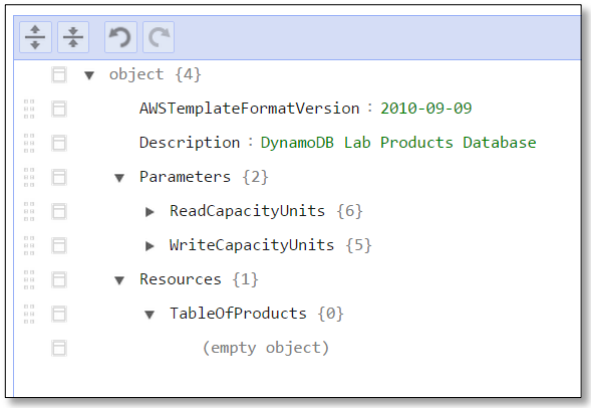
- Description: Provisioned write throughput
- Type: Number
- Default: 1
- MinValue: 1
- MaxValue: 10000
- ConstraintDescription: must be between 1 and 10000



Append an object called Resources to the Parameters object.



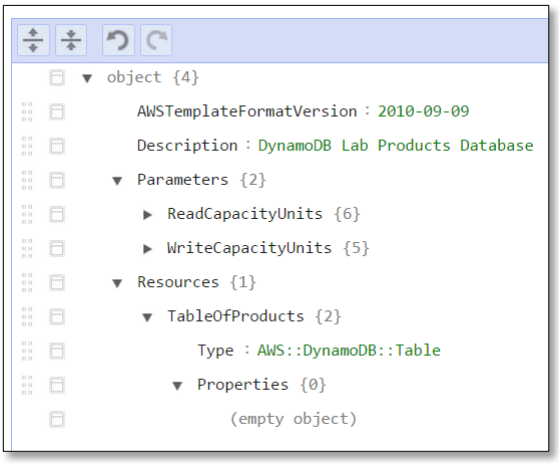
Append a TableOfProducts object to the Resources object:



Append TableOfProducts with keys:

Type: AWS::DynamoDB::Table

Append TableOfProducts with object Properties.

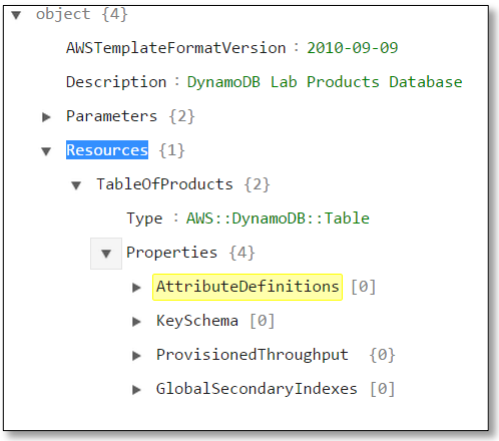


Append the following Arrays (not objects) to the Properties object:

- AttributeDefinitions
- KeySchema
- GlobalSecondaryIndexes

Append the following Object (not array) to the Properties object:

- ProvisionedThroughput



Append an Object to the AttributeDefinitions array.

Append the empty object with keys:

- AttributeName: Id
- AttributeType: N

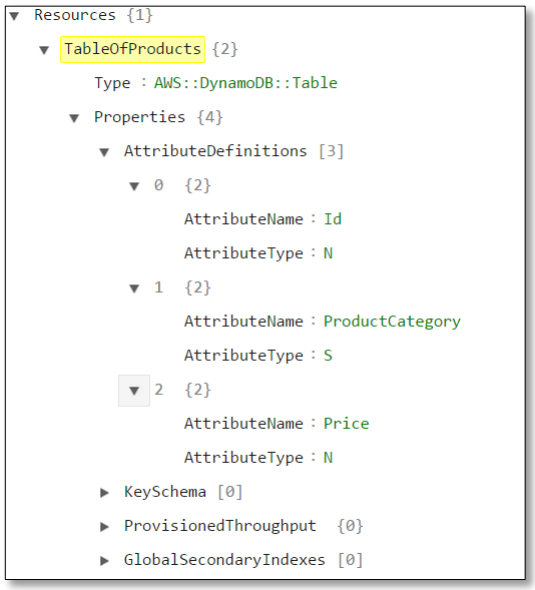
Duplicate the object two times.

Edit the vales with the following keys:

- AttributeName: ProductCategory
- AttributeType: S

And

- AttributeName: Price
- AttributeType: N

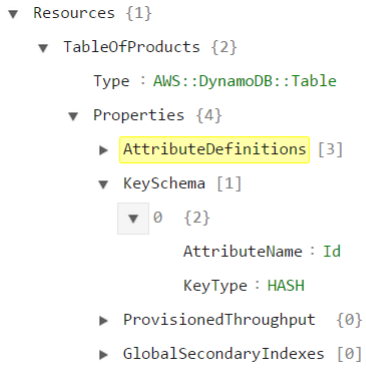


Append an Object to the KeySchema array.

Append the empty object with keys:

AttributeName: Id

KeyType: HASH



Append an Object to the ProvisionedThroughput object.

Append the empty object with keys with no values:

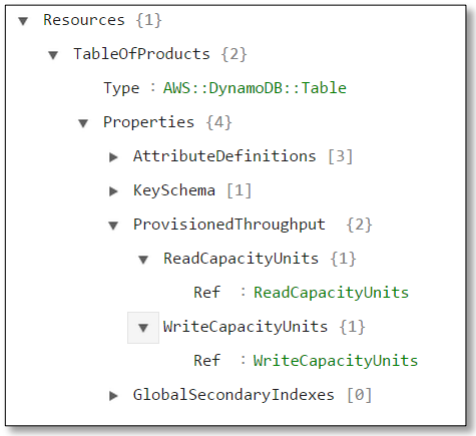
- ReadCapacityUnits

- WriteCapacityUnits

Select each key and change Type to object.

Now add keys that reference our Parameters object.

- Ref: ReadCapacityUnits
- Ref: WriteCapacityUnits



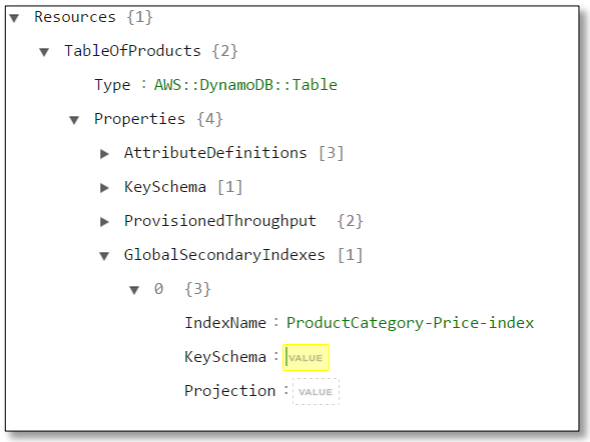
Append an Object to the GlobalSecondaryIndexes array.

Append key to object:

IndexName: ProductCategory-Price-index

Append the object with keys with no values:

- KeySchema
- Projection



Change KeySchema type to Array

Append an object to the array

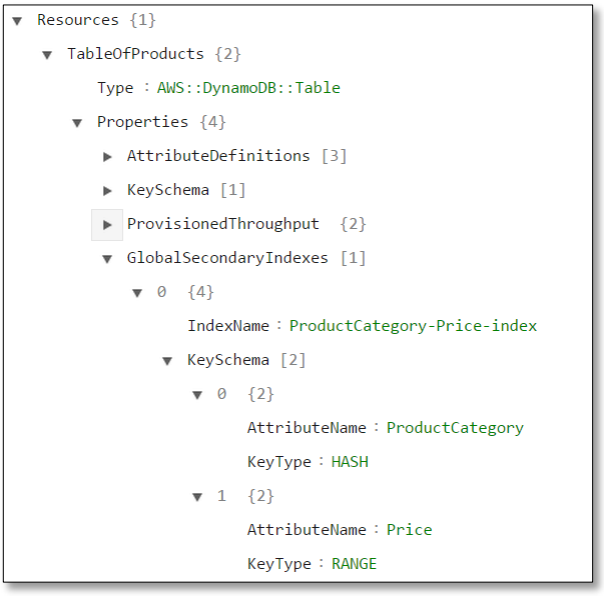
Append keys to the object

- AttributeName: ProductCategory
- KeyType: HASH

Duplicate the object

Change the keys

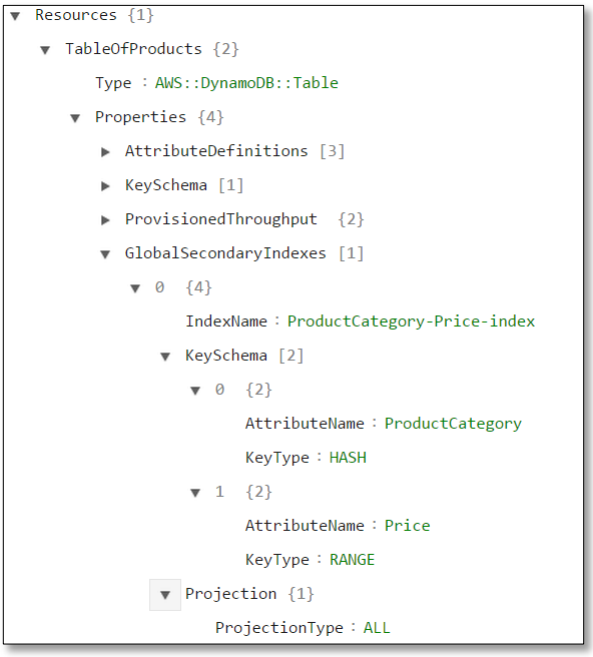
- AttributeName: Price
- KeyType: RANGE



Change Projection type to object

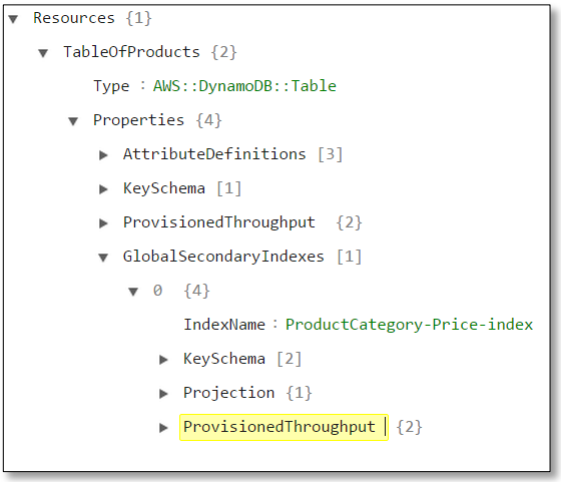
Append the key

ProjectionType: ALL

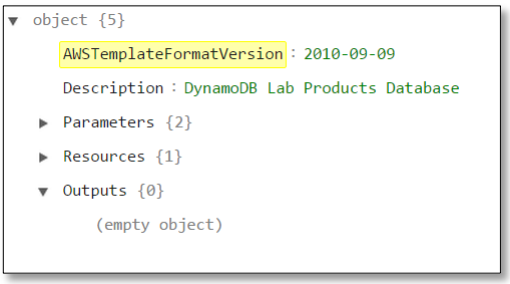


Duplicate the ProvisionedThroughput object created previously

Drag the object into the GlobalSecondaryIndexes array



Append an object Outputs after the Resources object



Add an object TableName

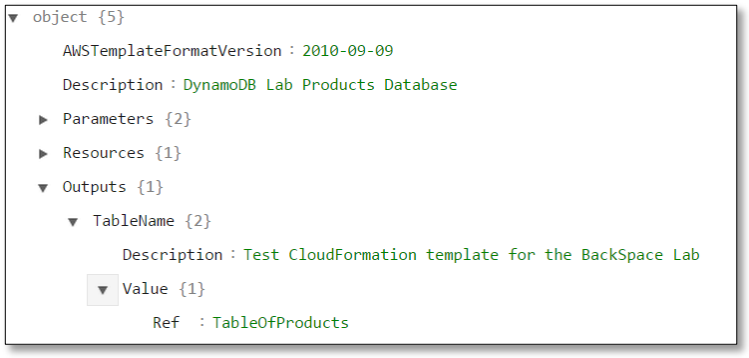
Add key to object

Description: Test CloudFormation template for the BackSpace Lab

Add object called Value

Add key to object Value

Ref: TableOfProducts



Save your code to disk.

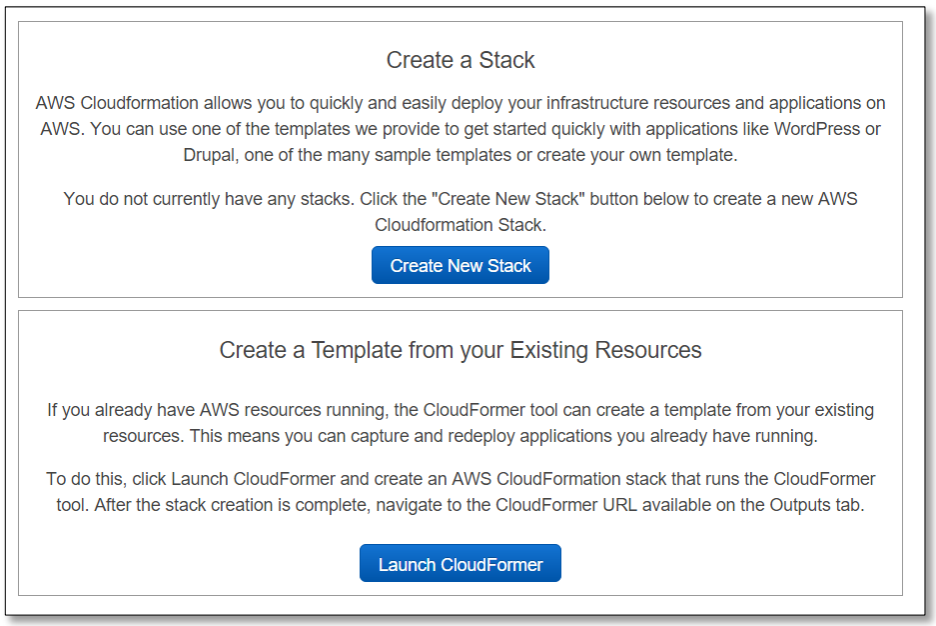
Your final JSON file should look like this:

https://gist.github.com/pcoady/efa71c94cfbba3c0469b

Launch a CloudFormation Stack

In this section we will launch a CloudFormation stack from our CloudFormation template.

Go to the CloudFormation console



Select Create new stack

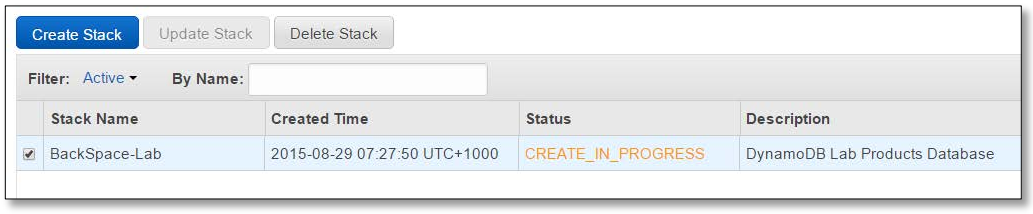
Give your stack a name

Upload your JSON file

Click Next

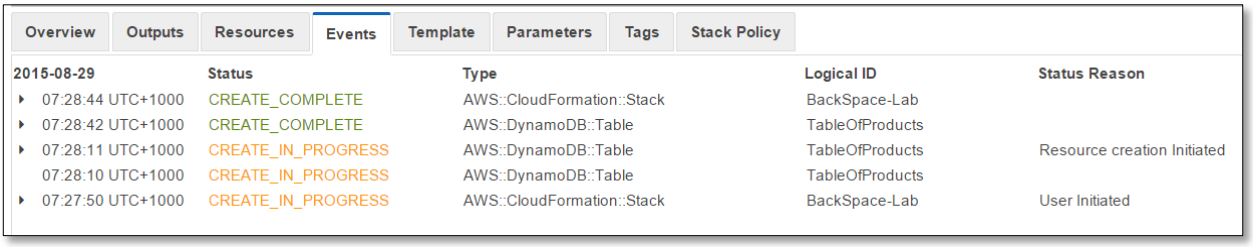
Click Next

Click Create

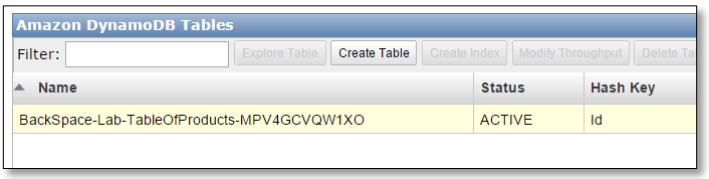


You have just created a DynamoDB database with pre-configured launch settings from the CloudFormation template.

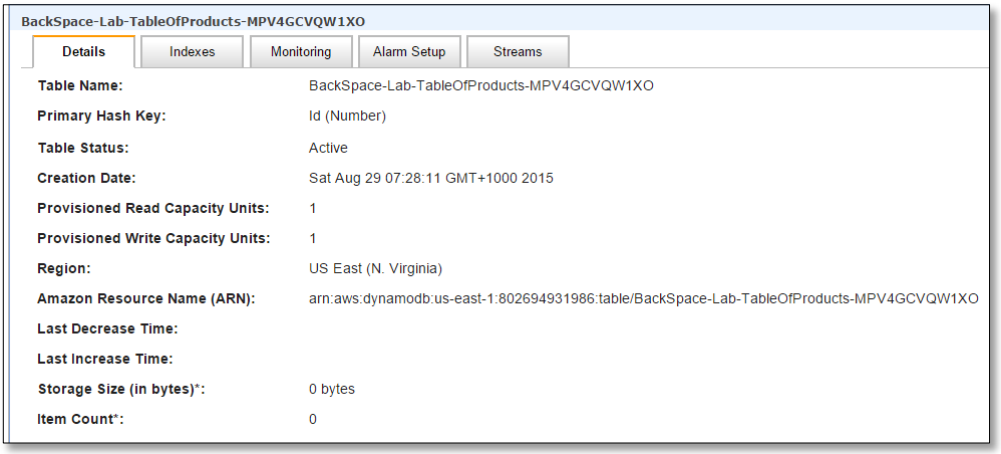
When the create has completed



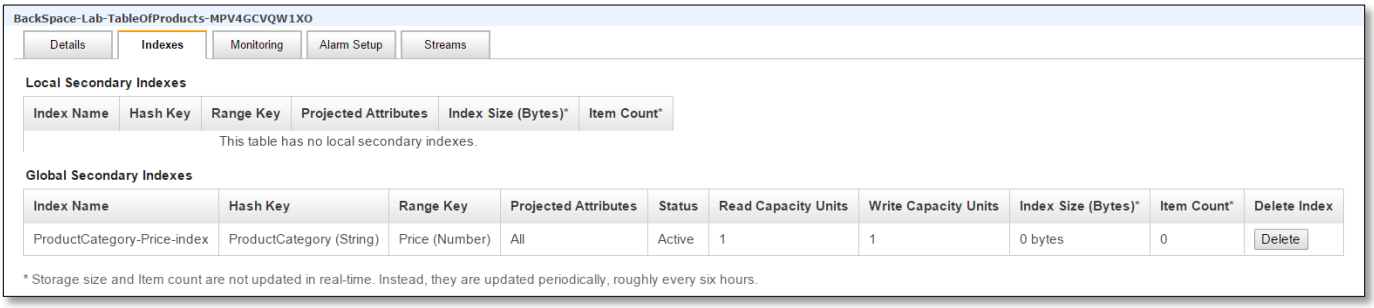
Go to the DynamoDB console to see the database



Click on the details tab to see the details set in the CloudFormation template



Click on Indexes tab to see the Global secondary index created from the CloudFormation template.



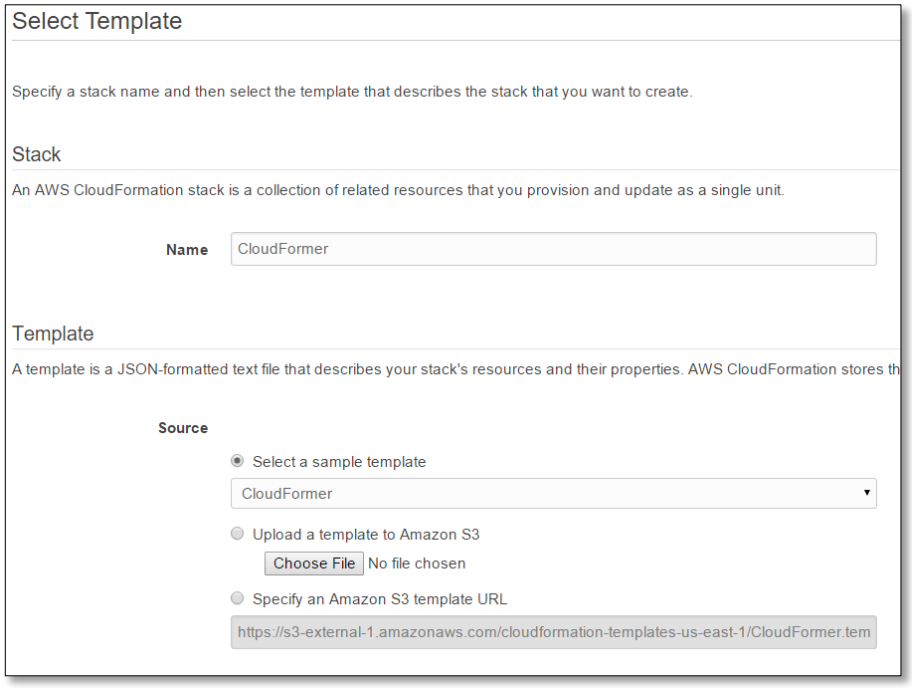
Creating a CloudFormation Template using CloudFormer

In this section we will launch CloudFormer to create a CloudFormation template from our existing resources

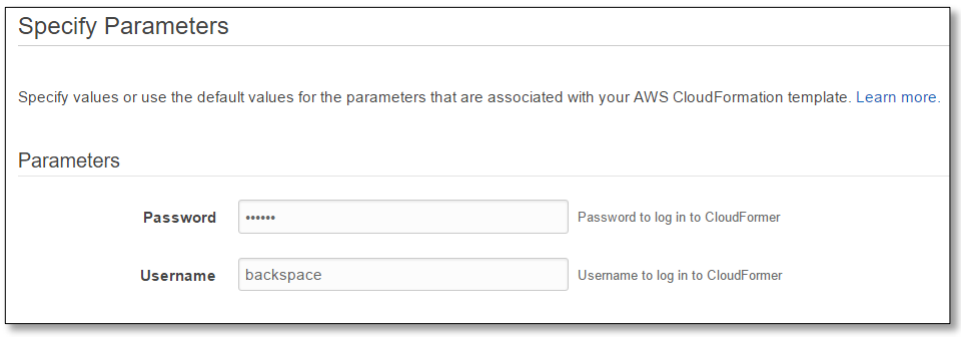
Go to the CloudFormation console and Create Stack

Call it CloudFormer

Select CloudFormer from the sample templates

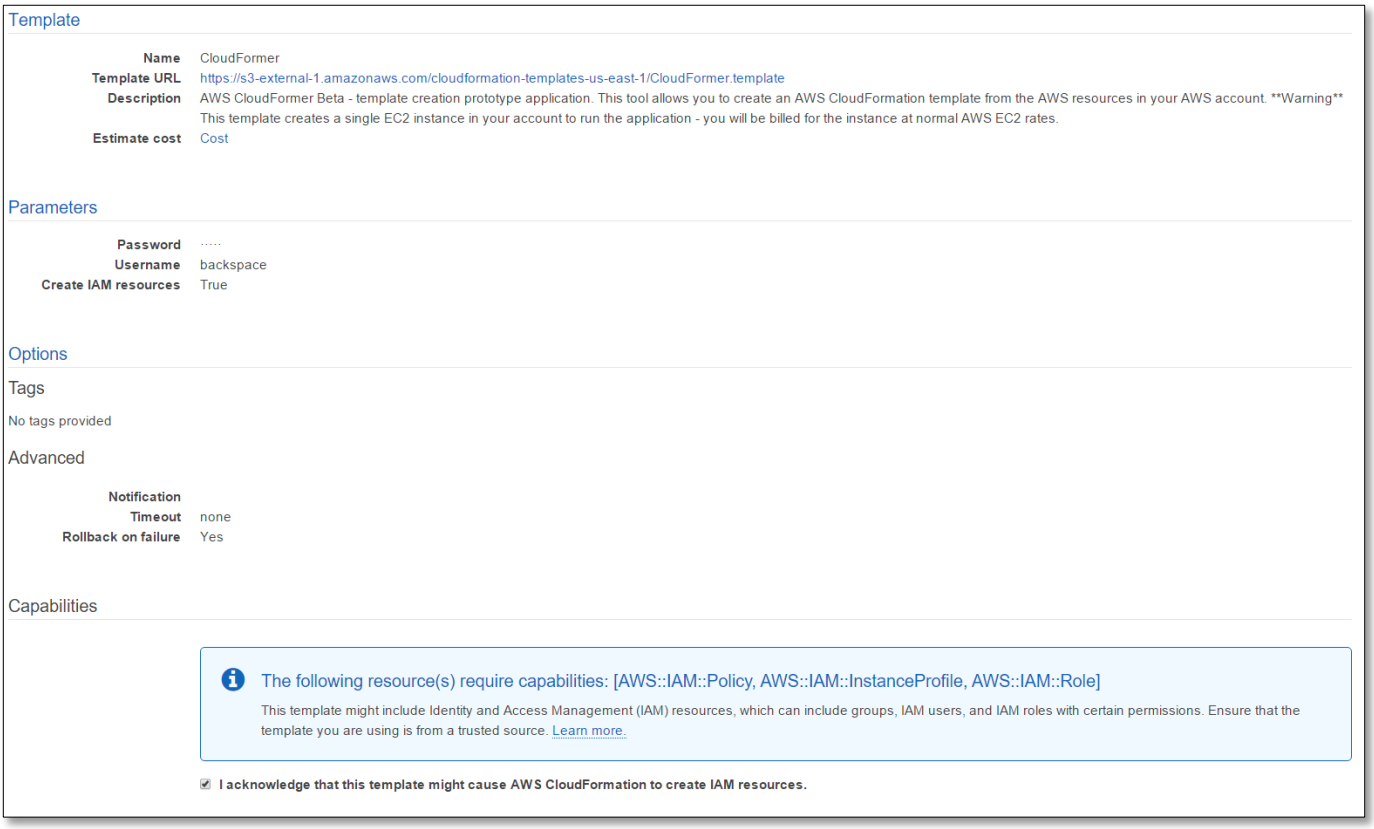


Enter a password and username



Review template.

Select the checkbox to acknowledge automatic creation of IAM resources.

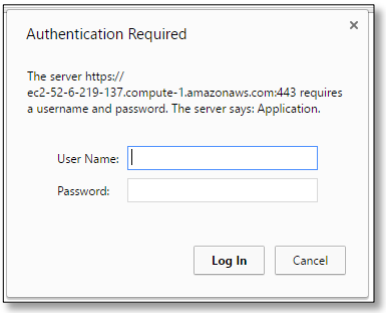


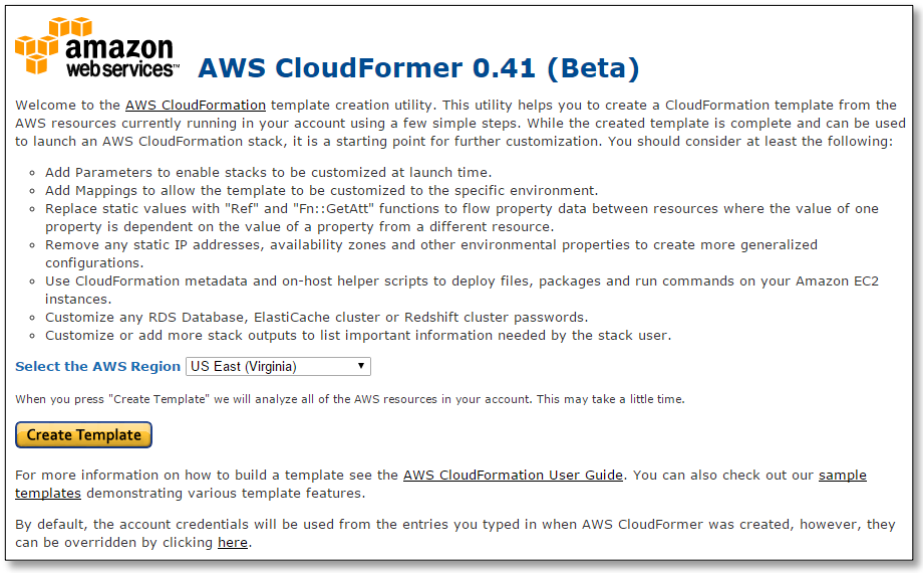
Click Create

After the Create has completed, select the Outputs tab to see the CloudFormer URL.

Go to the CloudFormer URL

Enter you password and username you set.



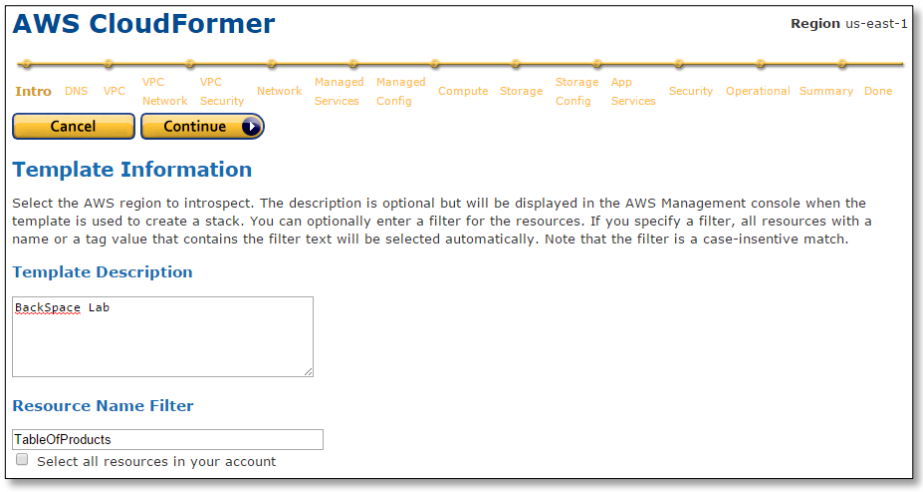


Click Create Template

Give the template a name

Filter resource names by TableOfProducts

Click Continue



Deselect everything for DNS and Click Continue

Deselect everything for VPC and Click Continue

Deselect everything for VPC Network and Click Continue

Deselect everything for VPC Security and Click Continue

Deselect everything for Network and Click Continue

Deselect everything for Managed Services and Click Continue

Deselect everything for Managed Service Configuration and Click Continue

Deselect everything for Compute Resources and Click Continue

Deselect everything for Storage and Click Continue

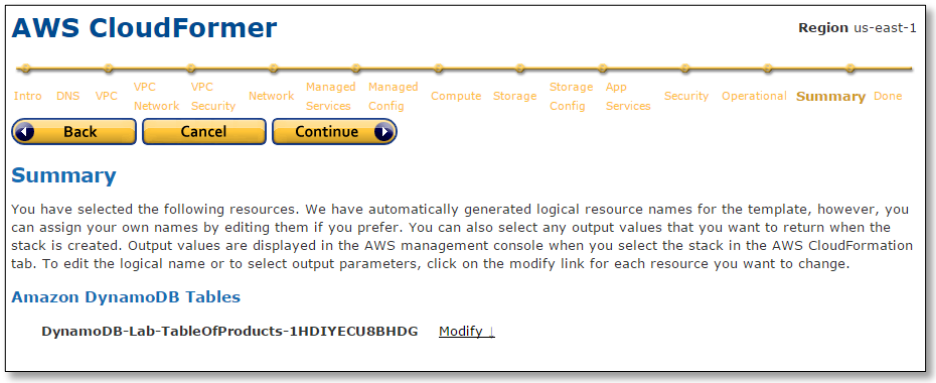
Deselect everything for Storage Configuration and Click Continue

Deselect everything for Application Services and Click Continue

Deselect everything for Security Groups and Click Continue

Deselect everything for Operational Resources and Click Continue

You will now see your DynamoDB TableOfProducts table

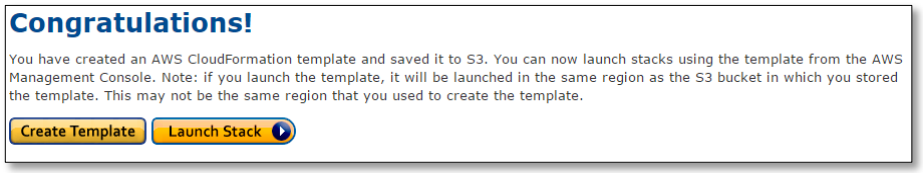


Click Continue

Now you have created a template to create a copy of your DynamoDB table.

Note the template does not have a parameters, outputs or references, it only has the resources section. It just creates an exact copy of resources without allowing for user interaction.

Save the template to S3.

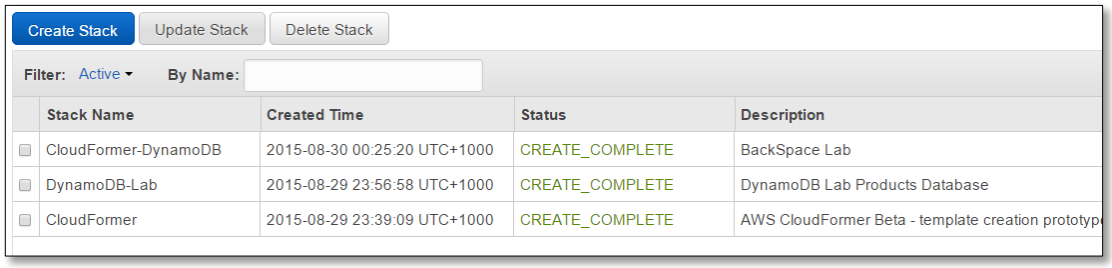


Click Launch Stack

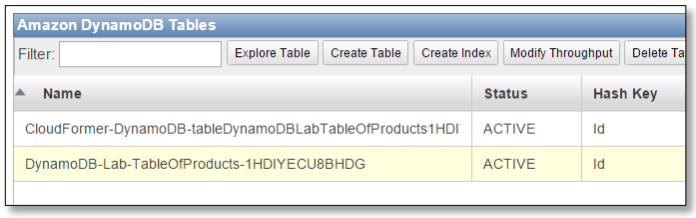
Give the stack a name and click Next

Click Next again.

Click Create

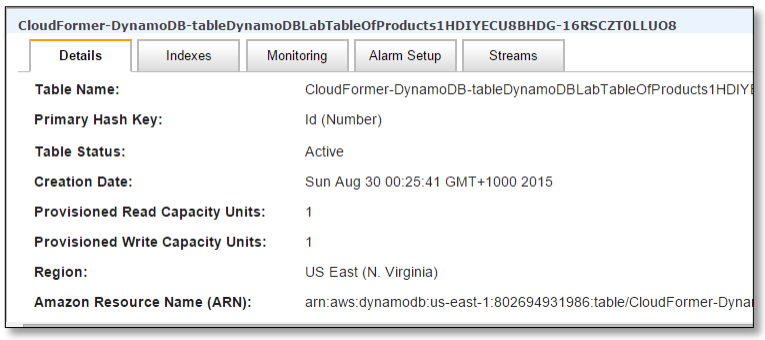


Now go to the DynamoDB console to see the new table

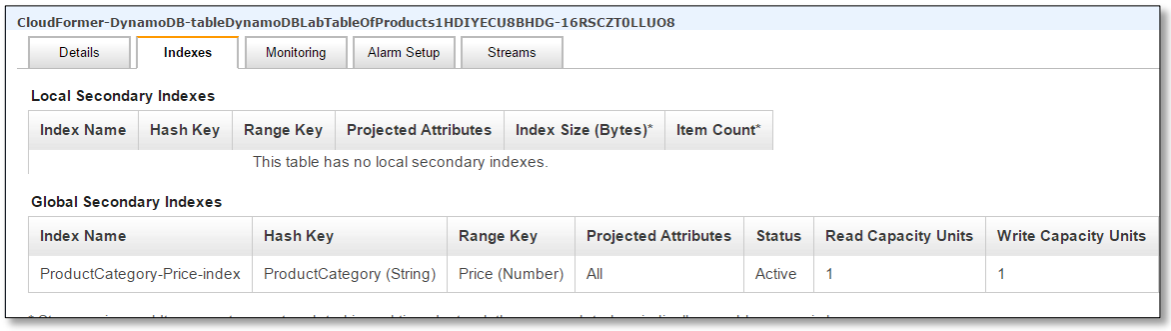


Select the table created using the CloudFormer template.

Click on the details tab



Click on the Indexes tab.



If you want to delete the resources after the lab go to the CloudFormation console and delete the stack. This will cleanly delete all the resources.