

# Define Cloud Infrastructure and Reusable Components Using AWS CloudFormation

## Lab scenario

In this lab, you will be a DevOps engineer at a financial services company called "FinTechBuddy". FinTechBuddy offers personalized financial management solutions to users. It helps individuals manage their budget, track expenses, and make informed financial decisions through data analytics and machine learning algorithms. The company wants to implement the best practices on cloud infrastructure and reusable components throughout the infrastructure lifecycle. You will use AWS CloudFormation StackSets to define cloud infrastructure for the company across multiple AWS Regions. You will leverage the principle of reusable components by defining a Networking CloudFormation stack that is later cross-referenced in the Application CloudFormation stack.

### Create Administration & Execution Roles for AWS CloudFormation Service

Create the administration and execution roles for AWS CloudFormation service. This task ensures that the necessary permissions have been created for creating AWS CloudFormation stacks across different AWS Regions using StackSets.

Create the administration role for the AWS CloudFormation service

#### Step 1: Specify template

[Edit](#)

##### Prerequisite - Prepare template

**Template**  
Template is ready

##### Template

**Template URL**  
<https://s3.us-east-1.amazonaws.com/cf-templates-szb6lquzm0m9-us-east-1/2025-03-18T174907.605Zxwb-AWSCloudFormationStackSetAdministrationRole.yml>

**Stack description**  
Configure the AWSCloudFormationStackSetAdministrationRole to enable use of AWS CloudFormation StackSets.

#### Step 2: Specify stack details

[Edit](#)

##### Provide a stack name

**Stack name**  
CF-Stack-admin-role

## Stacks (2)

	Stack name	Status	Created time
<input type="radio"/>	<a href="#">CF-stack-exe-role</a>	<span>🕒</span> CREATE_IN_PROGRESS	2025-03-18 13:55:41 UTC-0400
<input type="radio"/>	<a href="#">CF-Stack-admin-role</a>	<span>✅</span> CREATE_COMPLETE	2025-03-18 13:51:30 UTC-0400

You can verify that the IAM roles have been created by navigating to the IAM service and clicking on Roles in the left sidebar. You should see that the two relevant roles are listed.

The screenshot shows the AWS IAM console interface. On the left, the navigation sidebar is visible with 'IAM > Roles' selected. The main content area is titled 'Roles (17) Info' and includes a search bar. Below the search bar, there is a list of roles with checkboxes and role names: 'AWSCloudFormationStackSetAdministrationRole' and 'AWSCloudFormationStackSetExecutionRole'.

You should see that the **FinTechBuddyAppNetworkingStackSet** StackSet has been created successfully.

## FinTechBuddyAppNetworkingStackSet

StackSet info | **Stack instances** | Operations | Parameters | Template

### Stack instances (2)

For details of a stack instance, log into the stack instance's account, navigate to the appropriate region, and then select the desired stack by name.

🔍 Find stack instances by account, region, status, operation ID or drift status

AWS account	AWS region	Stack ID	Detailed status
028773348922	us-east-1	arn:aws:cloudformation:us-east-1:028773348922:stack/StackSet-FinTechBuddyAppNetworkingStackSet-8f63f054-f36b-4296-909f-00c3bf39d741/9aea7af0-0423-11f0-9726-0affc7938aed	🟢 RUNNING
028773348922	us-west-2	-	🟡 PENDING

### Create Application Infrastructure StackSet

Create the template for the application stack using AWS CloudFormation. Use the AWS CloudFormation StackSet to simultaneously provision the application infrastructure in the N.Virginia and Oregon AWS Regions. Leverage the principle of reusable components by using the elements from the Networking CloudFormation StackSet. The AWS CloudFormation StackSet will provision public EC2 instances in each of the two AWS Regions. Then, the user should be able to SSH into the instances via EC2 Instance Connect service.

# FinTechBuddAppStack

StackSet info | **Stack instances** | Operations | Parameters | Template

## Stack instances (2)

For details of a stack instance, log into the stack instance's account, navigate to the appropriate region, and then select the desired stack

🔍 Find stack instances by account, region, status, operation ID or drift status

AWS account	AWS region	Stack ID	Detailed status
028773348922	us-east-1	arn:aws:cloudformation:us-east-1:028773348922:stack/StackSet-FinTechBuddAppStack-d4b5e95d-f81d-4418-b293-cbb60b62224f/785b0490-0424-11f0-9aff-0ee8590be0e5	<span>🕒</span> RUNNING
028773348922	us-west-2	-	<span>🕒</span> PENDING



```
#####
#####\
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\#/\
V~' '->
~~~~
~~~~
~/m/'

Amazon Linux 2
AL2 End of Life is 2026-06-30.
A newer version of Amazon Linux is available!
Amazon Linux 2023, GA and supported until 2028-03-15.
https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-0-56 ~]#
```

## Upgrade the Application Infrastructure StackSet

Leveraging the principle of managing Infrastructure as Code (IaC), update the AWS CloudFormation template for the application stack to upgrade the EC2 instance type from *t2.micro* to *t2.small*. Use the AWS CloudFormation StackSet to simultaneously re-provision the infrastructure in the N.Virginia and Oregon AWS Regions. The revised application StackSet will result in public EC2 instances of *t2.small* instance type in each of the two AWS Regions. Then, the user should be able to SSH into the instances via EC2 Instance Connect service.

FinTechBuddAppStack: Manage StackSet

- Step 3  
Configure StackSet options
- Step 4  
Set deployment options
- Step 5  
Review

### IAM admin role ARN - optional

Choose the IAM role for CloudFormation to use for all operations performed on the stack.

IAM role name

AWSCloudFormationStackSetAdministrationRole

⚠ StackSets will use this role for administering your individual accounts.

### IAM execution role name

AWSCloudFormationStackSetExecutionRole

IAM execution role name can include letters (A-Z and a-z), numbers (0-9), and select special characters (+, -, @, \_). Maximum

### Prerequisite - Prepare template

You can also import a template by scanning your existing resources in the [IaC generator](#).

#### Prepare template

Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resource.

Use current template

Replace

### Specify template

This [GitHub repository](#) contains sample CloudFormation templates that can help you get started on new infrastru

#### Template source

Selecting a template generates an Amazon S3 URL where it will be stored. A template is a JSON or YAML file that describes your stack.

Amazon S3 URL

Upload

#### Upload a template file

FinTechBuddyApplicationStackUpdate.yaml

JSON or YAML formatted file

S3 URL: <https://s3.us-east-1.amazonaws.com/cf-templates-szb6lquzm0m9-us-east-1/2025-03-18T181713.253Zg>



Instances (1/1) [Info](#)

Last updated 2 minutes ago  [Connect](#) [Insta](#)

All states ▾

Instance state = running ✕

[Clear filters](#)

<input checked="" type="checkbox"/>	Name 	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status	Availability Zone
<input checked="" type="checkbox"/>		i-0b4fef4c5c1297228	<span>Running</span>  	t2.small	<span>2/2 checks passed</span>	<a href="#">View alarms +</a>	us-west-2a