


# Infrastructure as Code (IaC) Development

Job Role - Cloud & Devops




## Infrastructure as Code (IaC) Development -

### Task -

- Write and maintain infrastructure code using tools like Terraform or AWS CloudFormation.
  - Automate the provisioning and management of infrastructure resources.
  - Ensure version control and collaboration with team members on infrastructure code.
- 

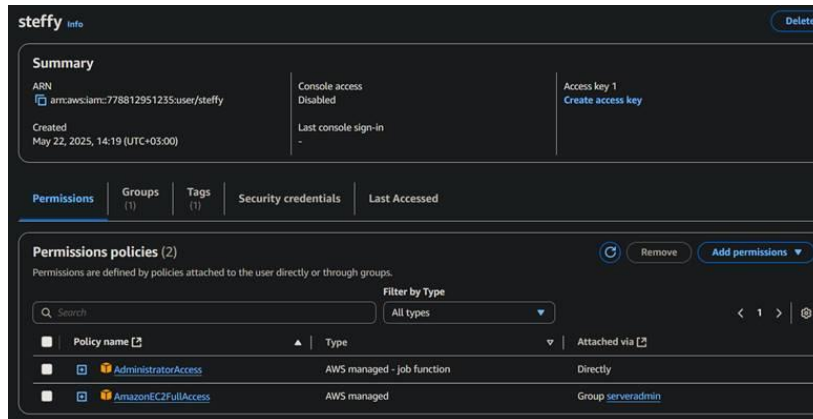


## Tools -

- AWS Cloudformation
  - Github
- 

## Steps Followed -

- Login to AWS account create a user with admin access and attach it with group.



The screenshot displays the AWS IAM console interface for a user named 'steffy'. The top section, titled 'Summary', provides key information: the user's ARN is 'arn:aws:iam::778812951235:user:steffy', console access is disabled, and it was created on May 22, 2025, at 14:19 UTC. A 'Create access key' button is visible. Below the summary, a navigation bar includes tabs for 'Permissions', 'Groups (1)', 'Tags (1)', 'Security credentials', and 'Last Accessed'. The 'Permissions policies (2)' section is active, showing a list of policies attached to the user. The policies are 'AdministratorAccess' (AWS managed - job function, attached directly) and 'AmazonEC2FullAccess' (AWS managed, attached via the 'serveradmin' group). A search bar and a 'Filter by Type' dropdown are also present.

Policy name	Type	Attached via
AdministratorAccess	AWS managed - job function	Directly
AmazonEC2FullAccess	AWS managed	Group serveradmin

The screenshot displays the AWS IAM console interface for a user group named 'serveradmin'. The 'Summary' tab is active, showing the group's name, creation time (May 22, 2025, 14:21 UTC+03:00), and ARN (arn:aws:iam:778812951235:group/serveradmin). Below this, the 'Users' tab is selected, showing one user in the group. The user 'steffy' is listed with 1 group, no last activity, and was created 39 minutes ago. The interface includes an 'Edit' button in the summary section and 'Remove' and 'Add users' buttons in the users section.

Summary			
User group name	Creation time	ARN	
serveradmin	May 22, 2025, 14:21 (UTC+03:00)	arn:aws:iam:778812951235:group/serveradmin	

Users (1)			
Users	Permissions	Access Advisor	
<b>Users in this group (1)</b>			
An IAM user is an entity that you create in AWS to represent the person or application that uses it to interact with AWS.			
<input type="text" value="Search"/>			
<input type="checkbox"/>	User name	Groups	Last activity
<input type="checkbox"/>	steffy	1	None

Login to the Github Create 2 folders - Template and Workflow

Inside Template Ec2stack yaml file (Instance build) have to create and inside workflow directory deploy file has to create with deployment script

CloudFormationDeployment

main

1 Branch

0 Tags

Go to file

Add file

<> Code

steffyag

Update deploy.yml ✓

89ffa10 · 7 minutes ago

21 Commits

.github/workflows

Update deploy.yml

7 minutes ago

templates

Create Ec2stack.yml

10 minutes ago

README.md

Update README.md

4 hours ago

README

Overview of Project -

This yaml script Automates the provision and management of EC2 infrastructure resources

Files

main

Go to file

.github/workflows

deploy.yml

templates

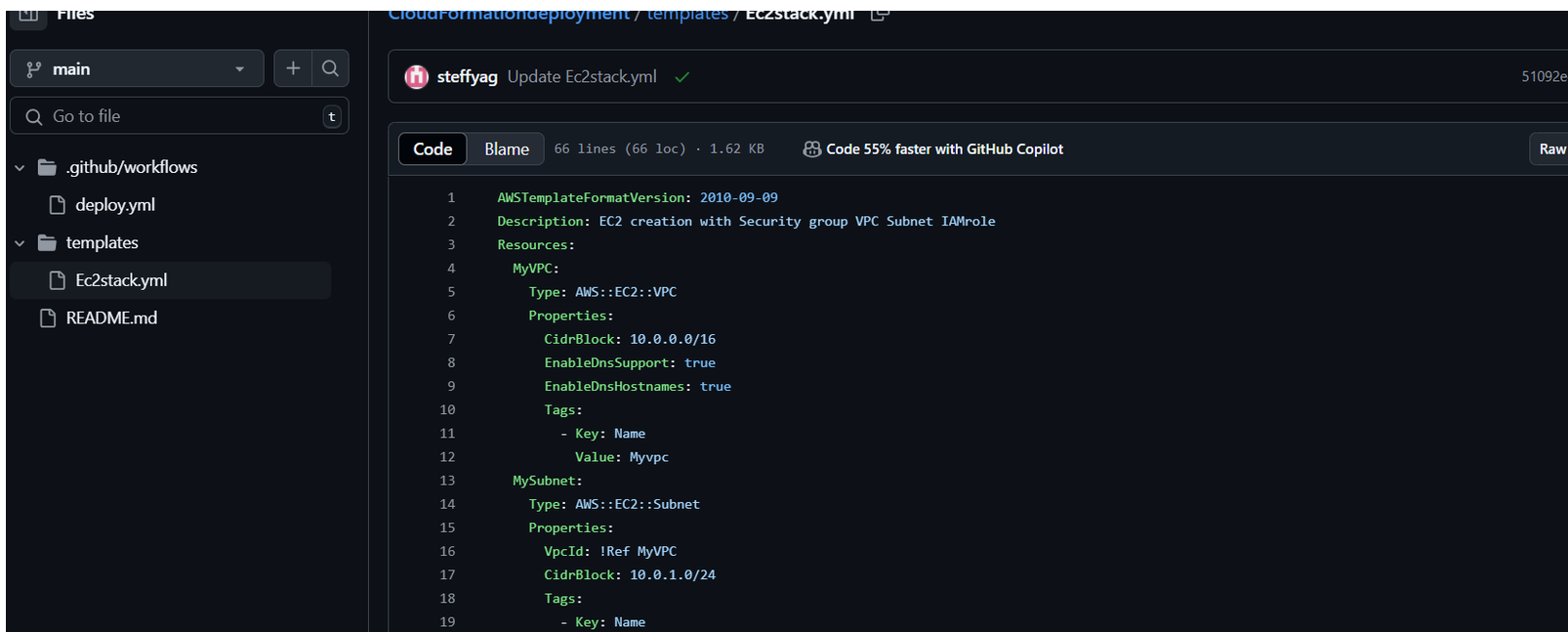
Ec2stack.yml

README.md

steffyag Update deploy.yml ✓

Code Blame 28 lines (23 loc) · 702 Bytes Code 55% faster with GitHub Copilot

```
1  name: Deploy CloudFormation Template
2
3  on:
4    push:
5      branches:
6        - main
7
8  jobs:
9    validate-and-deploy:
10     runs-on: ubuntu-latest
11
12     steps:
13       - name: Checkout repository
14         uses: actions/checkout@v2
15
16       - name: Set up AWS CLI
17         uses: aws-actions/configure-aws-credentials@v1
18         with:
19           aws-region: us-east-1
20           aws-access-key-id: AKIA3KVG6RLBWISSQ45V
21           aws-secret-access-key: hXybIFgoRCU7XMzJ6qnYc+GBFAOVfhxxZhTYhBF
22
23       - name: Deploy CloudFormation stack
24         run: |
25           aws cloudformation deploy \
26             --stack-name my-new-stack \
27             --template-file templates/Ec2stack.yml \
28             --capabilities CAPABILITY_IAM
```





✓ .github/workflows

└─ deploy.yml

✓ templates

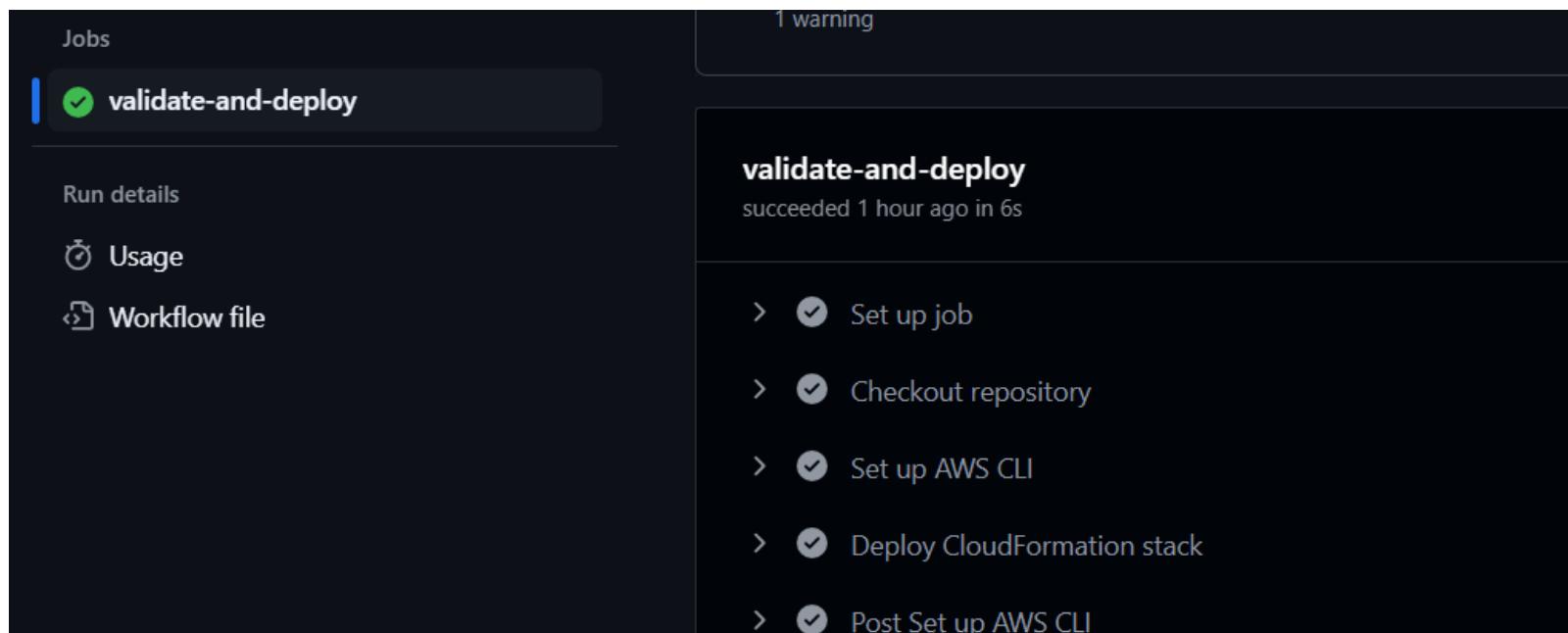
└─ Ec2stack.yml

└─ README.md

```
19     - Key: Name
20       Value: Mysubnet
21   MySecurityGroup:
22     Type: AWS::EC2::SecurityGroup
23     Properties:
24       GroupDescription: Allow SSH
25       VpcId: !Ref MyVPC
26       SecurityGroupIngress:
27         - IpProtocol: tcp
28           FromPort: 22
29           ToPort: 22
30           CidrIp: 0.0.0.0/0
31     Tags:
32       - Key: Name
33         Value: Mysecuritygroup
34   MyIAMRole:
35     Type: AWS::IAM::Role
36     Properties:
37       AssumeRolePolicyDocument:
38         Version: 2012-10-17
39         Statement:
40           - Effect: Allow
41             Principal:
42               Service: ec2.amazonaws.com
43             Action: sts:AssumeRole
44       ManagedPolicyArns:
45         - arn:aws:iam::aws:policy/AmazonEC2FullAccess
46     Tags:
47       - Key: Name
48         Value: Myiamrole
```

```
55     Type: AWS::EC2::Instance
56     Properties:
57         ImageId: ami-0953476d60561c955
58         InstanceType: t2.micro
59         IamInstanceProfile: !Ref MyInstanceProfile
60         KeyName: Mytestkeypair
61         SubnetId: !Ref MySubnet
62         SecurityGroupIds:
63             - !Ref MySecurityGroup
64         Tags:
65             - Key: Name
66               Value: MyAutomationinstance
```

## Validate and deploy -



The screenshot displays the AWS CodePipeline console interface. On the left sidebar, under the 'Jobs' section, the 'validate-and-deploy' job is selected and marked with a green checkmark. Below this, the 'Run details' section includes links for 'Usage' (with a clock icon) and 'Workflow file' (with a document icon). The main panel shows the job's status as 'succeeded 1 hour ago in 6s' with '1 warning'. A list of five steps follows, each with a chevron icon, a checkmark, and a description: 'Set up job', 'Checkout repository', 'Set up AWS CLI', 'Deploy CloudFormation stack', and 'Post Set up AWS CLI'.

Jobs

1 warning

✓ validate-and-deploy

Run details

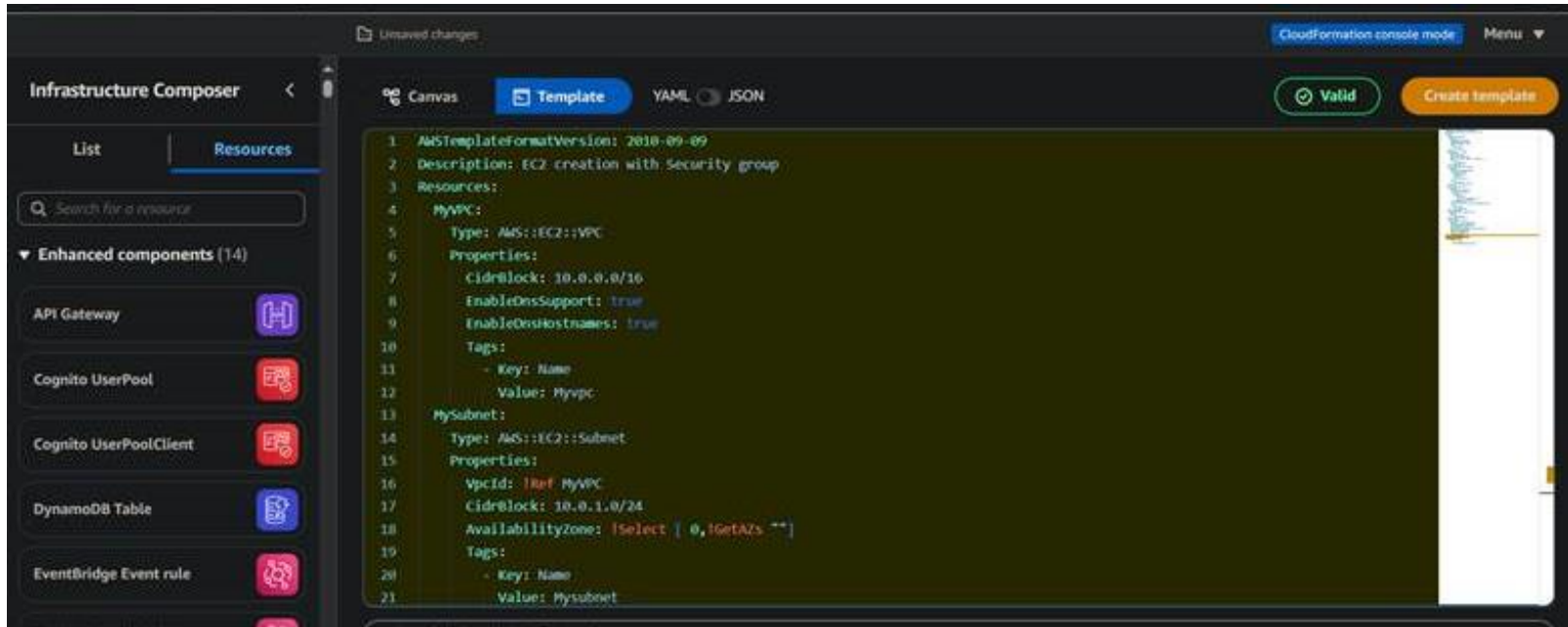
🕒 Usage

📄 Workflow file

**validate-and-deploy**  
succeeded 1 hour ago in 6s

- > ✓ Set up job
- > ✓ Checkout repository
- > ✓ Set up AWS CLI
- > ✓ Deploy CloudFormation stack
- > ✓ Post Set up AWS CLI

You can either validate yaml script in Cloudformation--> Infrastructure composer to check errors , if script correct it shows valid .



By pushing the deployment from Git, Ec2 Stack will be process and create instance along with VPC , subnet ,Security group and IAM role attached .

CloudFormation < Stacks (2)

Filter status: Filter by stack name, Active, View nested, < 1 >

Stack name	Status	Created time	Description
my-new-stack	CREATE_COMPLETE	2025-05-22 18:34:08 UTC+0300	EC2 creation with Security group

Stacks (1)

Filter status: Filter by stack name, Active, View nested, < 1 >

Stacks

- my-new-stack  
2025-05-22 18:34:08 UTC+0300  
CREATE\_COMPLETE

Instancestack1

Stack info | Events | Resources | Outputs | Parameters | Template | Change set

Table view | Timeline view

Events (21)

Search events

Timestamp	Logical ID	Status	Detailed status
2025-05-22 12:42:07 UTC+0300	Instancestack1	CREATE_COMPLETE	-
2025-05-22 12:42:06 UTC+0300	MyInstanceProfile	CREATE_COMPLETE	-
2025-05-22 12:40:14 UTC+0300	MyEC2Instance	CREATE_COMPLETE	-
2025-05-22 12:40:02 UTC+0300	MyEC2Instance	CREATE_IN_PROGRESS	-
2025-05-22 12:40:00 UTC+0300	MyEC2Instance	CREATE_IN_PROGRESS	-

Filter status

Active

View nested

< 1 >

Stacks

my-new-stack

2025-05-22 18:34:08 UTC+0300

CREATE\_COMPLETE

Timestamp	Logical ID	Status	Detailed status
2025-05-22 18:34:38 UTC+0300	<a href="#">MySecurityGroup</a>	CREATE_COMPLETE	-
2025-05-22 18:34:35 UTC+0300	MyInstanceProfile	CREATE_IN_PROGRESS	CONFIGURATION_COMPLETE
2025-05-22 18:34:34 UTC+0300	MyInstanceProfile	CREATE_IN_PROGRESS	-
2025-05-22 18:34:33 UTC+0300	MyInstanceProfile	CREATE_IN_PROGRESS	-
2025-05-22 18:34:33 UTC+0300	<a href="#">MySubnet</a>	CREATE_COMPLETE	-
2025-05-22 18:34:33 UTC+0300	<a href="#">MyIAMRole</a>	CREATE_COMPLETE	-
2025-05-22 18:34:32 UTC+0300	<a href="#">MySecurityGroup</a>	CREATE_IN_PROGRESS	-

Instances (1) Info

Last updated 4 minutes ago

Connect

Instance state

Actions





Launch instance

Running

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
MyAutomationInstance	i-00b65b890eb869891	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1c






Details | Status and alarms | Monitoring | **Security** | Networking

▼ Security details

<b>IAM Role</b>  <a href="#">my-new-stack-MyIAMRole-XmqOFglFwkOf</a> 	<b>Owner ID</b>  778812951235
<b>Security groups</b>  sg-09be7260ce7d0129c (my-new-stack-MySecurityGroup-...)	

i-00b65b890eb869891 (MyAutomationinstance)

Details | Status and alarms | Monitoring | Security | **Networking** | Storage | Tags

<b>VPC ID</b>  <a href="#">vpc-0ae59079cfc45585c (Myvpc)</a> 	<b>Subnet ID</b>  <a href="#">subnet-08616051c4491f193 (Mysubnet)</a> 	<b>Availability zone</b>  us-east-1c
--	---	--

Security group name ▼	Key name ▼	Launch time ▼	Platfor... ▼	Managed
my-new-stack-MySecuri...	Mytestkeypair	2025/05/22 18:35 GMT+3	Linux/UNIX	false



**THANK YOU**