CloudFormation

Using this template we can create Private vpc, subnet, internet gateway, routetable, securitygroup and 2 EC2 instances with bootstrap- installing appache webserver.

```
Resources:
 VPC:
  Type: AWS::EC2::VPC
  Properties:
   CidrBlock: 10.0.0.0/16
   Tags:
    - Key: Name
      Value: VPC

 InternetGateway:
  Type: AWS::EC2::InternetGateway

 VPCGatewayAttachment:
  Type: AWS::EC2::VPCGatewayAttachment
  Properties:
   VpcId: !Ref VPC
   InternetGatewayId: !Ref InternetGateway

 SubnetA:
  Type: AWS::EC2::Subnet
  Properties:
   AvailabilityZone: us-east-1a
   VpcId: !Ref VPC
   CidrBlock: 10.0.0.0/24
   MapPublicIpOnLaunch: true

 RouteTable:
  Type: AWS::EC2::RouteTable
  Properties:
   VpcId: !Ref VPC

 InternetRoute:
  Type: AWS::EC2::Route
  DependsOn: InternetGateway
```

```yaml
    Properties:
      DestinationCidrBlock: 0.0.0.0/0
      GatewayId: !Ref InternetGateway
      RouteTableId: !Ref RouteTable

  SubnetARouteTableAssociation:
    Type: AWS::EC2::SubnetRouteTableAssociation
    Properties:
      RouteTableId: !Ref RouteTable
      SubnetId: !Ref SubnetA

  InstanceSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Properties:
      GroupName: "Webserver SG Group"
      GroupDescription: "Webserver SG"
      VpcId: !Ref VPC
      SecurityGroupIngress:
        - IpProtocol: tcp
          FromPort: '22'
          ToPort: '22'
          CidrIp: 0.0.0.0/0
        - IpProtocol: tcp
          FromPort: '80'
          ToPort: '80'
          CidrIp: 0.0.0.0/0
        - IpProtocol: tcp
          FromPort: '443'
          ToPort: '443'
          CidrIp: 0.0.0.0/0
      SecurityGroupEgress:
        - IpProtocol: -1
          CidrIp: 0.0.0.0/0

  Webserver:
    Type: AWS::EC2::Instance
    Properties:
      ImageId: ami-03ededff12e34e59e
      InstanceType: t2.micro
      SubnetId: !Ref SubnetA
```
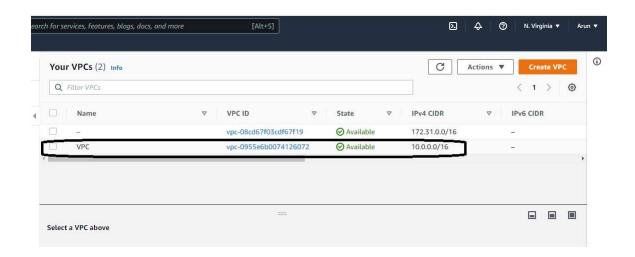
```
    SecurityGroupIds:
     - Ref: InstanceSecurityGroup
    UserData:
     Fn::Base64: !Sub |
        #!/bin/bash
        yum update -y
        yum install -y httpd.x86_64
        systemctl start httpd.service
        systemctl enable httpd.service
        echo "Hello World from $(hostname -f)" > /var/www/html/index.html
    Tags:
     -
       Key: Name
       Value:  WebServer


Webserver2:
   Type: AWS::EC2::Instance
   Properties:
    ImageId: ami-03ededff12e34e59e
    InstanceType: t2.micro
    SubnetId: !Ref SubnetA
    SecurityGroupIds:
     - Ref: InstanceSecurityGroup
    UserData:
     Fn::Base64: !Sub |
        #!/bin/bash
        yum update -y
        yum install -y httpd.x86_64
        systemctl start httpd.service
        systemctl enable httpd.service
        echo "Hello World from $(hostname -f)" > /var/www/html/index.html
    Tags:
     -
       Key: Name
       Value:  WebServer2
```
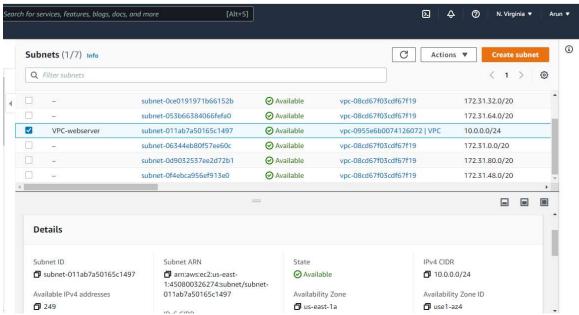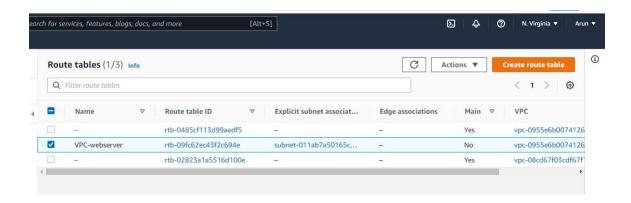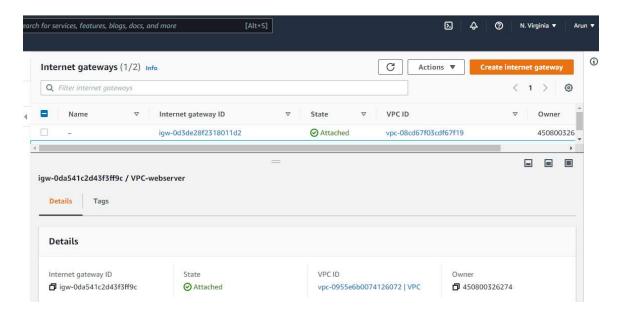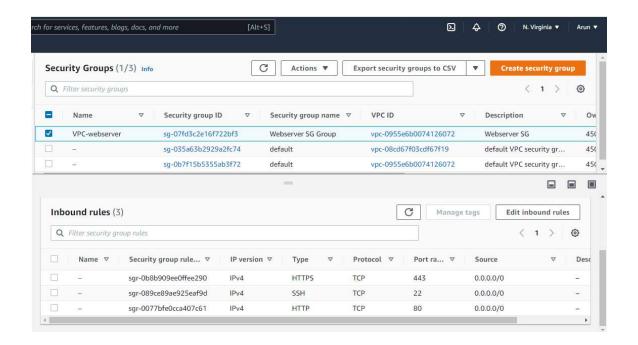
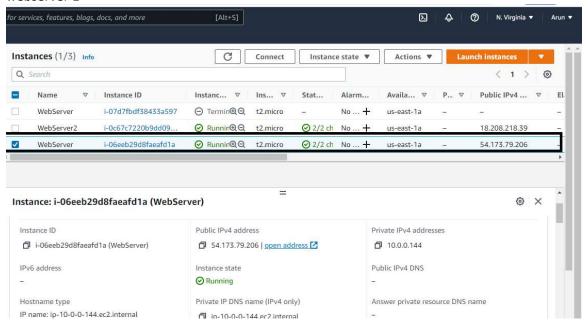**Screenshots of the Resources**

VPC

Subnet

Route Table

Internet gateway

Security groups

Security Groups (1/3) Info   Actions ▼   Export security groups to CSV ▼   Create security group

Filter security groups   〈 1 〉

	Name	Security group ID	Security group name	VPC ID	Description	Ow
☑	VPC-webserver	sg-07fd3c2e16f722bf3	Webserver SG Group	vpc-0955e6b0074126072	Webserver SG	450
☐	–	sg-035a63b2929a2fc74	default	vpc-08cd67f03cdf67f19	default VPC security gr...	450
☐	–	sg-0b7f15b5355ab3f72	default	vpc-0955e6b0074126072	default VPC security gr...	450

Inbound rules (3)   Manage tags   Edit inbound rules

Filter security group rules   〈 1 〉

	Name	Security group rule...	IP version	Type	Protocol	Port ra...	Source	Desc
☐	–	sgr-0b8b909ee0ffee290	IPv4	HTTPS	TCP	443	0.0.0.0/0	–
☐	–	sgr-089ce89ae925eaf9d	IPv4	SSH	TCP	22	0.0.0.0/0	–
☐	–	sgr-0077bfe0cca407c61	IPv4	HTTP	TCP	80	0.0.0.0/0	–

webserver 1

Instances (1/3) Info   Connect   Instance state ▼   Actions ▼   Launch instances ▼

Search   〈 1 〉

	Name	Instance ID	Instanc...	Ins...	Stat...	Alarm...	Availa...	P...	Public IPv4 ...	El
☐	WebServer	i-07d7fbdf38433a597	⊖ Termin	t2.micro	–	No ... +	us-east-1a	–	–	–
☐	WebServer2	i-0c67c7220b9dd09...	⊘ Runnin	t2.micro	⊘ 2/2 ch	No ... +	us-east-1a	–	18.208.218.39	–
☑	WebServer	i-06eeb29d8faeafd1a	⊘ Runnin	t2.micro	⊘ 2/2 ch	No ... +	us-east-1a	–	54.173.79.206	–

Instance: i-06eeb29d8faeafd1a (WebServer)

Instance ID
i-06eeb29d8faeafd1a (WebServer)

Public IPv4 address
54.173.79.206 | open address

Private IPv4 addresses
10.0.0.144

IPv6 address
–

Instance state
⊘ Running

Public IPv4 DNS
–

Hostname type
IP name: ip-10-0-0-144.ec2.internal

Private IP DNS name (IPv4 only)
ip-10-0-0-144.ec2.internal

Answer private resource DNS name
–

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← → C   ⚠ Not secure | 54.173.79.206

"Hello World from ip-10-0-0-144.ec2.internal"

Webserver2

← → C   ⚠ Not secure | 18.208.218.39

"Hello World from ip-10-0-0-5.ec2.internal"