3-tier Architechture using console

① create S3 bucket

Bucket name: demowebapp-bhargav15 } create bucket

aws Region: us-east-1

② Navigate to IAM Dashboard and create an EC2 role

Trusted entity type: AWS service

use case : EC2

Give the below permissions:

i) Amazon SSM Managed Instance core

ii) Amazon S3 Read Only Access

Role name: 3tier role 1

③ create VPC

Resources to create : VPC only

Name: 3tierVPC

IPV4: CIDR : 10.0.0.0/16

④ create subnets

VPC ID: 3tierVPC

Subnet 1 of 1

Name: Public-web-subnet1

Availability zone: us-east-1a

IPV4 CIDR Block: 10.0.0.0/24

Subnet 2 of 2

Name: Public-web-subnet2

Availability zone: us-east-1b

IPV4 CIDR Block: ~~10.0.0.0/24~~ 10.0.1.0/24

Subnet 3 of 3

Name: Private-subnet1

Availability zone: us-east-1a

IPV4 CIDR Block: 10.0.2.0/24

Subnet 4 of 4

Name: Private-subnet2

Availability zone : us-east-1b

IPV4 CIDR Block ; 10.0.3.0/24

Subnet 5 of 5

Name: Private-DB-subnet1

Availability zone: us-east-1a

IPV4 CIDR Block: 10.0.4.0/24

Subnet 6 of 6

Name: Private-DB-subnet2

Availability zone: us-east-1b

IPV4 CIDR Block: 10.0.5.0/24

⑤ create Internet Gateway

Name tag: 3tierIGW

● Actions → attach VPC → 3tierVPC

⑥ create NAT Gateway

Name: NATGW1

Subnet: Public-web-subnet1

Allocate elastic IP

⑦ create NAT Gateway

Name: NATGW2

Subnet: Public-web-subnet2

Allocate elastic IP

⑧ Route tables creation

Name: Public RouteTable

select VPC: 3tierVPC

Go to routes → edit routes → Add route

Destination: 0.0.0.0/0

Target: 3tierIGW

go to subnet Associations → Edit subnet Association

select public subnets

i) Public-web-subnet1

ii) Public-web-subnet2

Then click on save associations.

Again go to create route table

Name: Public Route Table

VPC: 3tierVPC

Then go to edit routes → add route

Destination: 0.0.0.0/0

Target: NATGW1

Then go to subnet associations → edit subnet association

select Private-subnet1 → save associations.

⑨ create Security Groups.

Name: InternetFacing-lb-SG

Description: External load balancer security group

VPC: 3tierVPC

Edit inbound rule

i) HTTP → 0.0.0.0/0 → Anywhere IPV4

ii) custom TCP → Anywhere IPV6

create security Group.

Next create Another Security Group

Name: WebTier-SG

Description: WebTier SG

VPC: 3tier VPC

Edit Inbound rule

i) HTTP → InternetFacing-lb-SG

ii) HTTP → My IP

Create Another Security Group

Name: Internal-lb-SG

Description: Internal-lb

VPC: 3tierVPC

Edit Inbound rule

i) HTTP → WebTierSG

Create Another Security Group

Name: Private-Instance1-SG

Description: Allow

VPC: 3tierVPC

Edit Inbound rule

i) CustomTCP → TCP → 4000 → custom → Internal-lb-SG

ii) CustomTCP → TCP → 4000 → 4000 → MyIP

Create Another Security Group

Name: DB-SG

Description: DB Security Group

VPC: 3tierVPC

Edit Inbound Rules

MySQL / Aurora → TCP → 3306 → custom → Private-Instances-SG

(10) Go to RDS → Go to subnet groups

Name: 3tierSubnetGroup

VPC: 3tierVPC

Availability zones: us-east-1a

us-east-1b

subnets: Private-DB-Subnet1

Private-DB-Subnet2

(11) Go to Database1 → create database → select standard create → Amazon Aurora (MySQL compatible) → Dev/Test

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DB cluster Identifier: database-1

Master username: admin

Master password: adminadmin

Multi-AZ deployment

create an Aurora Replica or Reader node in a different AZ

compute resources

Dont connect to an EC2 compute resource

VPC: 3tierVPC

VPC security Group (firewall)

DB-SG

Next uncheck turn on performance Insights.

Hit create database

(12) create EC2 instances

(1) create an instance with

Name: ~~mydatabaseserver1~~ myAPPserver1

Instance type: t2.micro.

Keypair: proceed without a key pair

Network settings

VPC: 3tierVPC

Subnet: Private-Subnet1

security group: Private-Instances-SG

Advanced settings

~~demo-ec2-role~~ IAM instance Profile

choose 3tierrole1

Then ssh into instance.

(13) Now click on myAppServer1 then click on Actions then go to Image and templete then create Image

Image name: AppTierImage
Description: App Tier

Hit create Image.

(14) Go to Target Groups → create Target group

target group type: Instances
target group Name: AppTierTargetGroup
HTTP: 4000
VPC: 3tierVPC

/health

2
2
5
30

200

} create target group.

(15) create load balancer

Application Load balancer
Name: app-tier-LB-internal

⊙ Internal
VPC: 3tierVPC

us-east-1a → private-subnet1
us-east-1b → private-subnet2
security Group → Internal-lb-SG
Default Action: AppTierTargetGroup

Hit create load Balancer

(16) create Launch Template

Name: Apptier-LaunchTemplate

choose MYAMI → Apptier Image

Instance type : t2.micro

Key pair : dont include

Security group : private-Instances-SG

Advanced settings → IAM instance profile

~~[redacted]~~ → 3tier role

create Launch Template.

(17) create Auto scaling Group.

Name: AppTierASG

Launch Template : Apptier-LaunchTemplate → Next

VPC: 3tierVPC

AZs: us-east-1a (private-subnet1)

us-east-1b (Private-subnet2) → Next

⊙ Attach to an Existing Load Balancer

Existing load balancer target groups: AppTierTargetGroup

→ Next

Desired capacity: 2 Minimum capacity : 2 Maximum : 2 → Next

→ Next → Next → create Autoscaling Group

Then two more Instances will be created.

(18) Go to EC2 → create EC2

Name : webserver → t2.micro → proceed without key pair

~~security group~~ VPC: 3tierVPC

subnet : public-web-subnet1

Enable

security Group: WebTier-SG

Advanced settings: 3tier role → create Instance

ssh into the instance

→ aws s3 cp s3://(name of bucket)

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(19) click on webserver instance → actions → image and templates → create image.

Image name: webserver image

Description: Webserver image

create image

(20) Go to Target group → create Target Group

→ Instances

TargetGroupName: Webserver-TG

VPC: 3tierVPC

/health →next

Create Target Group

(21) create load balancer → Application Load Balancer

Name: Web-tier-External-LB

⊙ Internet-facing

VPC: 3tier VPC

Mappings:

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us-east-1a (Public-web-subnet1)

us-east-1b (Public-web-subnet2)

Security Group: InternetFacing-lb-SG

Default action: Webserver-TG

create Load balancer

(22) Create Launch Template

Name: Webserver launch template

My AMI: webserver Image

Instance type: t2.micro

No key pair.

security group: Webtier-SG

Advanced details: 3tierrole1 → create launch template

(23) create Autoscaling Group

Name: webserver ASG

Launch: Webserver Launch Template → Next

VPC: 3tierVPC

AZs: public-web-subnet1
public-web-subnet2

Attach to an existing load balancer → webserver-TG → Next

Desired capacity: 2 Min: 2 max: 2 → Next → Next

→ create Auto scaling group

copy webtier external load balancer DNS

paste in private chrome window.