

```
TERMINAL  PORTS  PROBLEMS  OUTPUT  DEBUG CONSOLE
cdk deploy NetworkingStack
NetworkingStack
Deployment time: 55.05s

Outputs:
NetworkingStack.ExportsOutputRefAssignment3Vpc08A9FD199C8CF13F = vpc-0010dc708467d2f30
NetworkingStack.ExportsOutputRefPublicSubnet1Subnet0306792710644A21 = subnet-001eab6d1b8c4e5ee
NetworkingStack.ExportsOutputRefPublicSubnet2Subnet7884848D01FA85DA = subnet-078360eddf06ab788
NetworkingStack.OutputSubnetAZ1 = subnet-001eab6d1b8c4e5ee
NetworkingStack.OutputSubnetAZ2 = subnet-078360eddf06ab788
NetworkingStack.VpcId = vpc-0010dc708467d2f30
Stack ARN:
arn:aws:cloudformation:us-east-1:141262319565:stack/NetworkingStack/bd9593b0-d799-11f0-943a-126e0c135879
Total time: 85.21s
```

```
TERMINAL  PORTS  PROBLEMS  OUTPUT  DEBUG CONSOLE
cdk deploy Ec2Stack

Outputs:
NetworkingStack.ExportsOutputRefAssignment3Vpc08A9FD199C8CF13F = vpc-0010dc708467d2f30
NetworkingStack.ExportsOutputRefPublicSubnet1Subnet0306792710644A21 = subnet-001eab6d1b8c4e5ee
NetworkingStack.ExportsOutputRefPublicSubnet2Subnet7884848D01FA85DA = subnet-078360eddf06ab788
NetworkingStack.OutputSubnetAZ1 = subnet-001eab6d1b8c4e5ee
NetworkingStack.OutputSubnetAZ2 = subnet-078360eddf06ab788
NetworkingStack.VpcId = vpc-0010dc708467d2f30
Stack ARN:
arn:aws:cloudformation:us-east-1:141262319565:stack/NetworkingStack/bd9593b0-d799-11f0-943a-126e0c135879
Total time: 30.74s

Ec2Stack: start: Publishing 0d9b0d246fb2fd4249f9a46a295eb713aec2e9f9ebab5c4377c11506b9f8a630:current_account-us-east-1
Ec2Stack: success: Published 0d9b0d246fb2fd4249f9a46a295eb713aec2e9f9ebab5c4377c11506b9f8a630:current_account-us-east-1
Ec2Stack
Stack Ec2Stack
IAM Statement Changes


|   | Resource                            | Effect | Action         | Principal                 | Condition |
|---|-------------------------------------|--------|----------------|---------------------------|-----------|
| + | \${Assignment3Ec2/InstanceRole.Arn} | Allow  | sts:AssumeRole | Service:ec2.amazonaws.com |           |


Security Group Changes


|   | Group                        | Dir | Protocol   | Peer            |
|---|------------------------------|-----|------------|-----------------|
| + | \${Ec2SecurityGroup.GroupId} | In  | TCP 22     | Everyone (IPv4) |
| + | \${Ec2SecurityGroup.GroupId} | Out | Everything | Everyone (IPv4) |


```

```
Ec2Stack
Deployment time: 180.63s

Outputs:
Ec2Stack.Ec2InstanceId = i-05238602cc60e8851
Ec2Stack.Ec2PublicIp = 3.226.249.18
Stack ARN:
arn:aws:cloudformation:us-east-1:141262319565:stack/Ec2Stack/1fc38c90-d79a-11f0-9819-0e76718867ed
```

```

TERMINAL PORTS PROBLEMS OUTPUT DEBUG CONSOLE
cdk deploy RdsStack

Outputs:
NetworkingStack.ExportsOutputRefAssignment3Vpc08A9FD199C8CF13F = vpc-0010dc708467d2f30
NetworkingStack.ExportsOutputRefPublicSubnet1Subnet0306792710644A21 = subnet-001eab6d1b8c4e5ee
NetworkingStack.ExportsOutputRefPublicSubnet2Subnet78B4B48DD1FA85DA = subnet-078360eddff06ab788
NetworkingStack.OutputSubnetAZ1 = subnet-001eab6d1b8c4e5ee
NetworkingStack.OutputSubnetAZ2 = subnet-078360eddff06ab788
NetworkingStack.VpcId = vpc-0010dc708467d2f30
Stack ARN:
arn:aws:cloudformation:us-east-1:141262319565:stack/NetworkingStack/bd9593b0-d799-11f0-943a-126e0c135879

🌟 Total time: 31.55s

RdsStack: start: Publishing 7894a2df1542dea95819408f9ecdd51df976f5a688500cafdcceeefd70948c1f:current_account-us-east-1
RdsStack: success: Published 7894a2df1542dea95819408f9ecdd51df976f5a688500cafdcceeefd70948c1f:current_account-us-east-1
RdsStack
Stack RdsStack
Security Group Changes

```

	Group	Dir	Protocol	Peer
+	\${RdsSecurityGroup.GroupId}	In	TCP 3306	Everyone (IPv4)
+	\${RdsSecurityGroup.GroupId}	Out	Everything	Everyone (IPv4)

```
TERMINAL | PORTS | PROBLEMS | OUTPUT | DEBUG CONSOLE
cdk deploy RdsStack
RdsStack | 7/7 | 4:07:01 PM | CREATE_COMPLETE | AWS::CloudFormation::Stack | RdsStack
[✓] RdsStack
🌟 Deployment time: 582.94s

Outputs:
RdsStack.DatabaseName = assignment3
RdsStack.RdsEndpointAddress = rdsstack-assignment3rdsinstanceb833a077-exoaykcvhu32.cexqii8a86rk.us-east-1.rds.amazonaws.com
RdsStack.RdsEndpointPort = 3306
Stack ARN:
arn:aws:cloudformation:us-east-1:141262319565:stack/RdsStack/284ba9d0-d79d-11f0-83ca-0afff08119bf

🌟 Total time: 615.57s
```

AWS Console

VPC dashboard

Introducing VPC encryption control
Manage and enforce encryption settings across your Virtual Private Cloud (VPC) resources. This centralized control helps ensure compliance with security policies and data protection regulations.

Your VPCs

Find VPCs by attribute or tag

Name	VPC ID	State	Encryption c...	Encryption control ...	Block Public...	IPv4 CIDR	IPv6 CIDR	DHCP option
-	vpc-0b323af707116431b	Available	-	-	Off	172.31.0.0/16	-	dhopt-0450d6
assignment3-vpc	vpc-0010dc708467d2f30	Available	-	-	Off	10.0.0.0/16	-	dhopt-0450d6

vpc-0010dc708467d2f30 / assignment3-vpc

Details | **Resource map** | CIDRs | Flow logs | Tags | Integrations

Resource map

VPC: Your AWS virtual network

Subnets (2): Subnets within this VPC

- us-east-1a
 - NetworkingStack/PublicSubnet1
 - us-east-1b
 - NetworkingStack/PublicSubnet2

Route tables (4): Route network traffic to resources

- rtb-0812880a2106b532e
- NetworkingStack/PublicSubnet1
- NetworkingStack/PublicSubnet2
- rtb-0d04b78e200296f73

Network Connections (1): Connections to other networks

- igw-0e5b3081e6bcd9d3

VPC dashboard

Subnets (2/8)

Find subnets by attribute or tag

Name	Subnet ID	State	VPC	Block Public...	IPv4 CIDR	IPv6 CIDR	IPv6 CIDR association ID
-	subnet-0b986c2b4b612c2ff	Available	vpc-0b323af707116431b	Off	172.31.32.0/20	-	-
-	subnet-0656646e73f31b5fb	Available	vpc-0b323af707116431b	Off	172.31.80.0/20	-	-
-	subnet-0a2f378f63ba9d653	Available	vpc-0b323af707116431b	Off	172.31.16.0/20	-	-
-	subnet-090c1a9d23221387	Available	vpc-0b323af707116431b	Off	172.31.0.0/20	-	-
-	subnet-0b5e8adb355039aa1	Available	vpc-0b323af707116431b	Off	172.31.48.0/20	-	-
NetworkingStack/PublicSubnet2	subnet-078360e0d06ab788	Available	vpc-0010dc708467d2f30 assi...	Off	10.0.2.0/24	-	-
NetworkingStack/PublicSubnet1	subnet-001a9bd18dc4e5ee	Available	vpc-0010dc708467d2f30 assi...	Off	10.0.1.0/24	-	-
-	subnet-090036d602ff6d263	Available	vpc-0b323af707116431b	Off	172.31.64.0/20	-	-

VPC dashboard

Internet gateways (1/2)

Find internet gateways by attribute or tag

Name	Internet gateway ID	State	VPC ID	Owner
-	igw-0345c9b93bed2d31e	Attached	vpc-0b323af707116431b	141262319565
igw-0e5b3081e6bcd9d3	igw-0e5b3081e6bcd9d3	Attached	vpc-0010dc708467d2f30 assignment3-vpc	141262319565

igw-0e5b3081e6bcd9d3

Details | Tags

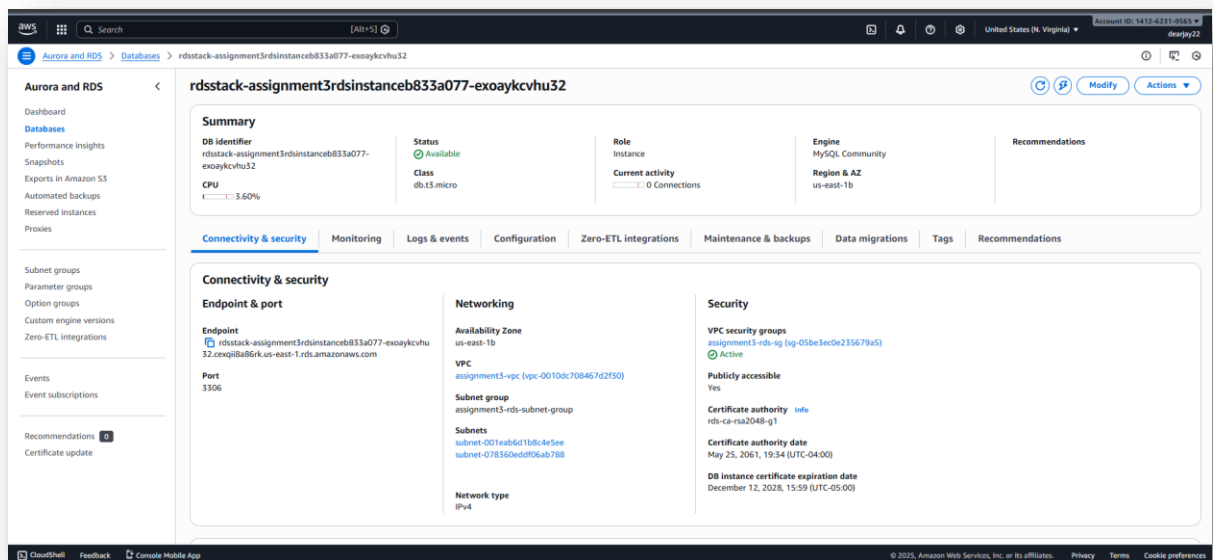
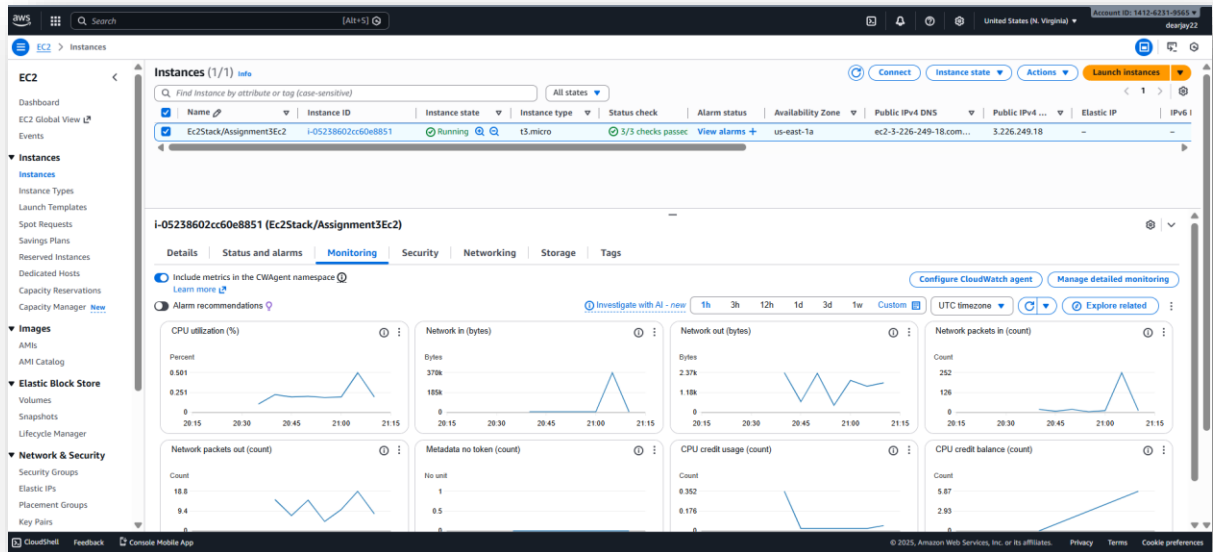
Details

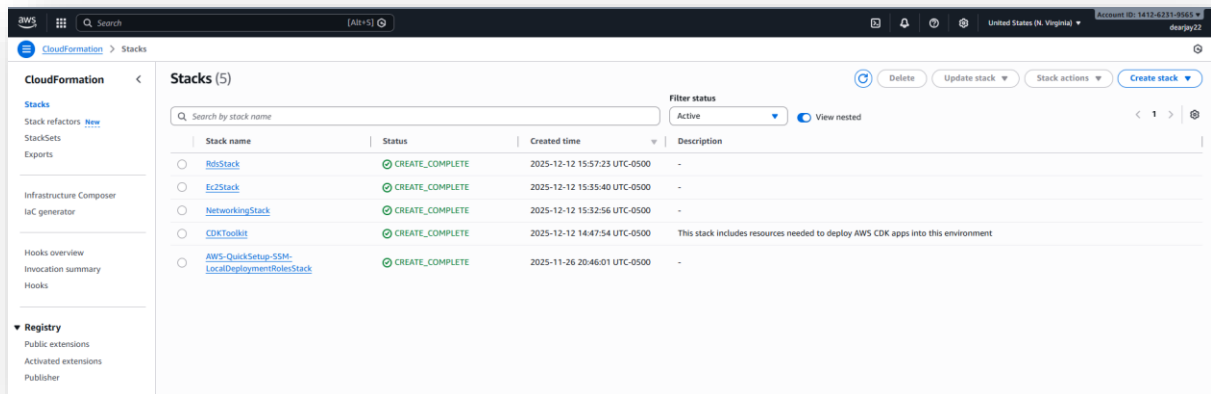
Internet gateway ID: igw-0e5b3081e6bcd9d3

State: Attached

VPC ID: vpc-0010dc708467d2f30 | assignment3-vpc

Owner: 141262319565





Networking CloudFormation Template

Resources:

Assignment3Vpc08A9FD19:

Type: AWS::EC2::VPC

Properties:

CidrBlock: 10.0.0.0/16

EnableDnsHostnames: true

EnableDnsSupport: true

InstanceTenancy: default

Tags:

- Key: Name

Value: assignment3-vpc

Metadata:

aws:cdk:path:
NetworkingStack/Assignment3Vpc/Resource

PublicSubnet1Subnet03067927:

Type: AWS::EC2::Subnet

Properties:

AvailabilityZone: us-east-1a

CidrBlock: 10.0.1.0/24

MapPublicIpOnLaunch: true

Tags:

- Key: Name

Value: NetworkingStack/PublicSubnet1

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path: NetworkingStack/PublicSubnet1/Subnet

PublicSubnet1RouteTable57E60591:

Type: AWS::EC2::RouteTable

Properties:

Tags:

- Key: Name

Value: NetworkingStack/PublicSubnet1

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path:
NetworkingStack/PublicSubnet1/RouteTable

PublicSubnet1RouteTableAssociation0E73B917:

Type: AWS::EC2::SubnetRouteTableAssociation

Properties:

RouteTableId:

Ref: PublicSubnet1RouteTable57E60591

SubnetId:

Ref: PublicSubnet1Subnet03067927

Metadata:

aws:cdk:path:
NetworkingStack/PublicSubnet1/RouteTableAssociation

PublicSubnet2Subnet78B4B4BD:

Type: AWS::EC2::Subnet

Properties:

AvailabilityZone: us-east-1b

CidrBlock: 10.0.2.0/24

MapPublicIpOnLaunch: true

Tags:

- Key: Name

Value: NetworkingStack/PublicSubnet2

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path: NetworkingStack/PublicSubnet2/Subnet

PublicSubnet2RouteTable1853D61A:

Type: AWS::EC2::RouteTable

Properties:

Tags:

- Key: Name

Value: NetworkingStack/PublicSubnet2

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path:

NetworkingStack/PublicSubnet2/RouteTable

PublicSubnet2RouteTableAssociation1339F17B:

Type: AWS::EC2::SubnetRouteTableAssociation

Properties:

RouteTableId:

Ref: PublicSubnet2RouteTable1853D61A

SubnetId:

Ref: PublicSubnet2Subnet78B4B4BD

Metadata:

aws:cdk:path:

NetworkingStack/PublicSubnet2/RouteTableAssociation

InternetGateway:

Type: AWS::EC2::InternetGateway

Metadata:

aws:cdk:path: NetworkingStack/InternetGateway

IgwAttachment:

Type: AWS::EC2::VPCGatewayAttachment

Properties:

InternetGatewayId:

Ref: InternetGateway

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path: NetworkingStack/IgwAttachment

PublicRouteTable:

Type: AWS::EC2::RouteTable

Properties:

VpcId:

Ref: Assignment3Vpc08A9FD19

Metadata:

aws:cdk:path: NetworkingStack/PublicRouteTable

DefaultRoute:

Type: AWS::EC2::Route

Properties:

DestinationCidrBlock: 0.0.0.0/0

GatewayId:

Ref: InternetGateway

RouteTableId:

Ref: PublicRouteTable

Metadata:

aws:cdk:path: NetworkingStack/DefaultRoute

SubnetAssoc1:

Type: AWS::EC2::SubnetRouteTableAssociation

Properties:

RouteTableId:

Ref: PublicRouteTable

SubnetId:

Ref: PublicSubnet1Subnet03067927

Metadata:

aws:cdk:path: NetworkingStack/SubnetAssoc1

SubnetAssoc2:

Type: AWS::EC2::SubnetRouteTableAssociation

Properties:

RouteTableId:

Ref: PublicRouteTable

SubnetId:

Ref: PublicSubnet2Subnet78B4B4BD

Metadata:

aws:cdk:path: NetworkingStack/SubnetAssoc2

CDKMetadata:

Type: AWS::CDK::Metadata

Properties:

Analytics:

v2:deflate64:H4sIAAAAAAAAAA/0WMwQqDMBBEv8V7TFuFehYPpaeKFq9lT
beYqhsxG0TEfy9WIaeZeQMvbkpdrIs8BTDZU7zbsdC2XkkG1Aib7QhXJpRq
UyD5U5ZkoXU3I2/KtMI7xCXWHnnuWwmuUBtaGtvT0jCMh34BxgvnwHitlB
tX0SN67igKtcaP6yx+OB7efB11FPnNj6BTLsyyT4Gu1DkdHrHuUxZ4/g6T
Au+QAAAA=

Metadata:

aws:cdk:path: NetworkingStack/CDKMetadata/Default

Outputs:

VpcId:

Value:

Ref: Assignment3Vpc08A9FD19

OutputSubnetAZ1:

Value:

Ref: PublicSubnet1Subnet03067927

OutputSubnetAZ2:

Value:

Ref: PublicSubnet2Subnet78B4B4BD

ExportsOutputRefAssignment3Vpc08A9FD199C8CF13F:

Value:

Ref: Assignment3Vpc08A9FD19

Export:

Name:

NetworkingStack:ExportsOutputRefAssignment3Vpc08A9FD199C8C
F13F

ExportsOutputRefPublicSubnet1Subnet0306792710644A21:

Value:

Ref: PublicSubnet1Subnet03067927

Export:

Name:

NetworkingStack:ExportsOutputRefPublicSubnet1Subnet0306792710644A21

ExportsOutputRefPublicSubnet2Subnet78B4B4BDD1FA85DA:

Value:

Ref: PublicSubnet2Subnet78B4B4BD

Export:

Name:

NetworkingStack:ExportsOutputRefPublicSubnet2Subnet78B4B4BDD1FA85DA

Parameters:

BootstrapVersion:

Type: AWS::SSM::Parameter::Value<String>

Default: /cdk-bootstrap/hnb659fds/version

Description: Version of the CDK Bootstrap resources in this environment, automatically retrieved from SSM Parameter Store. [cdk:skip]

EC2 CloudFormation Template

Resources:

Ec2SecurityGroup55889913:

Type: AWS::EC2::SecurityGroup

Properties:

GroupDescription: Security group for EC2 allowing
SSH

GroupName: assignment3-ec2-sg

SecurityGroupEgress:

- CidrIp: 0.0.0.0/0

Description: Allow all outbound traffic by
default

IpProtocol: "-1"

SecurityGroupIngress:

- CidrIp: 0.0.0.0/0

Description: Allow SSH from anywhere

FromPort: 22

IpProtocol: tcp

ToPort: 22

VpcId:

Fn::ImportValue:

NetworkingStack:ExportsOutputRefAssignment3Vpc08A9FD199C8C
F13F

Metadata:

aws:cdk:path: Ec2Stack/Ec2SecurityGroup/Resource

Assignment3Ec2InstanceRole14A6B004:

Type: AWS::IAM::Role

Properties:

AssumeRolePolicyDocument:

Statement:

- Action: sts:AssumeRole

Effect: Allow

Principal:

Service: ec2.amazonaws.com

Version: "2012-10-17"

Tags:

- Key: Name

Value: Ec2Stack/Assignment3Ec2

Metadata:

aws:cdk:path:

Ec2Stack/Assignment3Ec2/InstanceRole/Resource

Assignment3Ec2InstanceProfile0763B6FB:

Type: AWS::IAM::InstanceProfile

Properties:

Roles:

- Ref: Assignment3Ec2InstanceRole14A6B004

Metadata:

aws:cdk:path:

Ec2Stack/Assignment3Ec2/InstanceProfile

Assignment3Ec2F69968E4:

Type: AWS::EC2::Instance

Properties:

AvailabilityZone: us-east-1a

IamInstanceProfile:

Ref: Assignment3Ec2InstanceProfile0763B6FB

ImageId: ami-0e86e20dae9224db8

InstanceType: t3.micro

SecurityGroupIds:

- Fn::GetAtt:
 - Ec2SecurityGroup55889913
 - GroupId

SubnetId:

Fn::ImportValue:

NetworkingStack:ExportsOutputRefPublicSubnet1Subnet0306792710644A21

Tags:

- Key: Name
 - Value: Ec2Stack/Assignment3Ec2

UserData:

Fn::Base64: "#!/bin/bash"

DependsOn:

- Assignment3Ec2InstanceRole14A6B004

Metadata:

aws:cdk:path: Ec2Stack/Assignment3Ec2/Resource

CDKMetadata:

Type: AWS::CDK::Metadata

Properties:

Analytics:

v2:deflate64:H4sIAAAAAAAAA/1WLQQ6CMBREz8K+/QokcgAXpWkHMDUWuIXaEn7G0Ka3t0IduFqJu/NVFCeGjgWcvFcPQc+4gNiR1INTC7+HrWqIHZ

aBYe0XpwNMzv35h9cjSdp1P6a3BND0UEUdtxwzqxbZ3scdUpMaG+D28+3Q
H0gbf+jibUrvaw51FDW0BRvj8hdMISTBrHnBw7LeNzDAAAA

Metadata:

aws:cdk:path: Ec2Stack/CDKMetadata/Default

Outputs:

Ec2PublicIp:

Description: Public IP of the EC2 instance

Value:

Fn::GetAtt:

- Assignment3Ec2F69968E4
- PublicIp

Ec2InstanceId:

Description: EC2 Instance ID

Value:

Ref: Assignment3Ec2F69968E4

Parameters:

BootstrapVersion:

Type: AWS::SSM::Parameter::Value<String>

Default: /cdk-bootstrap/hnb659fds/version

Description: Version of the CDK Bootstrap resources in
this environment, automatically retrieved from SSM
Parameter Store. [cdk:skip]

RDS CloudFormation Template

Resources:

RdsSecurityGroup632A77E4:

Type: AWS::EC2::SecurityGroup

Properties:

GroupDescription: Security group for RDS allowing MySQL (3306)

GroupName: assignment3-rds-sg

SecurityGroupEgress:

- CidrIp: 0.0.0.0/0

Description: Allow all outbound traffic by default

IpProtocol: "-1"

SecurityGroupIngress:

- CidrIp: 0.0.0.0/0

Description: Allow MySQL access from anywhere

FromPort: 3306

IpProtocol: tcp

ToPort: 3306

VpcId:

Fn::ImportValue:

NetworkingStack:ExportsOutputRefAssignment3Vpc08A9FD199C8CF13F

Metadata:

aws:cdk:path: RdsStack/RdsSecurityGroup/Resource

Assignment3RdsSubnetGroup:

Type: AWS::RDS::DBSubnetGroup

Properties:

DBSubnetGroupDescription: Subnet group for
Assignment 3 RDS

DBSubnetGroupName: assignment3-rds-subnet-group

SubnetIds:

- Fn::ImportValue:

NetworkingStack:ExportsOutputRefPublicSubnet1Subnet0306792
710644A21

- Fn::ImportValue:

NetworkingStack:ExportsOutputRefPublicSubnet2Subnet78B4B4B
DD1FA85DA

Metadata:

aws:cdk:path:

RdsStack/Assignment3RdsSubnetGroup/Default

RdsStackAssignment3RdsInstanceSecretBEBEB8653fdaad7efa85
8a3daf9490cf0a702aeb:

Type: AWS::SecretsManager::Secret

Properties:

Description:

Fn::Join:

- ""

- - "Generated by the CDK for stack: "

- Ref: AWS::StackName

GenerateSecretString:

ExcludeCharacters: " %+~`#\$%*()|[]{}:;<>?!'/'@\"\\\""

GenerateStringKey: password

PasswordLength: 30

SecretStringTemplate: '{"username":"admin"}'

Name: assignment3-rds-credentials

UpdateReplacePolicy: Delete

DeletionPolicy: Delete

Metadata:

aws:cdk:path:

RdsStack/Assignment3RdsInstance/Secret/Resource

Assignment3RdsInstanceSecretAttachmentCD95F268:

Type: AWS::SecretsManager::SecretTargetAttachment

Properties:

SecretId:

Ref:

RdsStackAssignment3RdsInstanceSecretBEBEB8653fdaad7efa858a
3daf9490cf0a702aeb

TargetId:

Ref: Assignment3RdsInstanceB833A077

TargetType: AWS::RDS::DBInstance

Metadata:

aws:cdk:path:

RdsStack/Assignment3RdsInstance/Secret/Attachment/Resource

Assignment3RdsInstanceB833A077:

Type: AWS::RDS::DBInstance

Properties:

AllocatedStorage: "20"

CopyTagsToSnapshot: true

DBInstanceClass: db.t3.micro

DBName: assignment3

DBSubnetGroupName:

Ref: Assignment3RdsSubnetGroup

Engine: mysql

EngineVersion: 5.7

MasterUserPassword:

Fn::Join:

- ""

- - "{{resolve:secretsmanager:"

- Ref:

RdsStackAssignment3RdsInstanceSecretBEBEB8653fdaad7efa858a
3daf9490cf0a702aeb

- :SecretString:password::}}}

MasterUsername: admin

MaxAllocatedStorage: 100

MultiAZ: false

PubliclyAccessible: true

StorageType: gp2

VPCSecurityGroups:

- Fn::GetAtt:

- RdsSecurityGroup632A77E4

- GroupId

UpdateReplacePolicy: Snapshot

DeletionPolicy: Snapshot

Metadata:

aws:cdk:path:
RdsStack/Assignment3RdsInstance/Resource

CDKMetadata:

Type: AWS::CDK::Metadata

Properties:

Analytics:
v2:deflate64:H4sIAAAAAAAAA/12NQQuCQBCFf0v3dcqE0ldCdCq0e4zr1
Ju5xs4sEYv/PUyS6vTge9/jzSFeLGE2wQdHuqyjmykg5IK6VvjgUyA9h5C
T9s7Ic+taf1ebs/0BnXI1Q8h9YU1GJV1/gxQFC2TaWRa0mkaQk3Ykw+BTd
orflBu0eCEHYbjsxSG06C4kKxHUVUNW1Cj8N13Xd3svd/+2MuLWu/7j8JS
qtdME4gSWkysbEzlvxTQE2ZAvqUYFYRwBAAA=

Metadata:

aws:cdk:path: RdsStack/CDKMetadata/Default

Outputs:

RdsEndpointAddress:

Description: RDS Endpoint Address

Value:

Fn::GetAtt:

- Assignment3RdsInstanceB833A077
- Endpoint.Address

RdsEndpointPort:

Description: RDS Endpoint Port

Value:

Fn::GetAtt:

- Assignment3RdsInstanceB833A077
- Endpoint.Port

DatabaseName:

Description: Database Name

Value: assignment3

Parameters:

BootstrapVersion:

Type: AWS::SSM::Parameter::Value<String>

Default: /cdk-bootstrap/hnb659fds/version

Description: Version of the CDK Bootstrap resources in this environment, automatically retrieved from SSM Parameter Store. [cdk:skip]