

# Creation of the customized VPC with CloudFormation able to communicate EC2 to RDS communication

## Amazon RDS

Amazon Relational Database Service (Amazon RDS) is a managed service that makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity, while managing time-consuming database administration tasks, freeing you up to focus on your applications and business.

es, features, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187

### Create stack

**Prerequisite - Prepare template**

Prepare template  
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

1 ☒ Template is ready ☐ Use a sample template ☐ Create template in Designer

**Specify template**  
A template is a JSON or YAML file that describes your stack's resources and properties.

Template source  
Selecting a template generates an Amazon S3 URL where it will be stored.

☐ Amazon S3 URL ☒ Upload a template file 2

Upload a template file  
3 Choose file   
JSON or YAML formatted file

S3 URL: <https://s3-external-1.amazonaws.com/cf-templates-wiad65o9w5iw-us-east-1/2022258AKd-vpc-ec2-RDS.yml> View in Designer

Cancel Next 4

features, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187

stack

## Specify stack details

**Stack name**

Stack name

1 EC2-RDS

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

**Parameters**

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

No parameters

There are no parameters defined in your template

Cancel Previous **Next** 2

tures, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187

**Rollback configuration**

Monitoring time

-

CloudWatch alarm ARN

-

**Notification options**

No notification options

There are no notification options defined

**Stack creation options**

Timeout

-

Termination protection

Disabled

► Quick-create link

Cancel Previous Create change set **Create stack**

## Yaml File

In this section we have created our customised VPC, Public subnet for launching EC2, Private subnets for launching MySQL Database.

Resources:

MyVPC:

Type: AWS::EC2::VPC

Properties:

CidrBlock: 192.178.0.0/16

PublicSubnet:

Type: AWS::EC2::Subnet

Properties:

VpcId: !Ref MyVPC

CidrBlock: 192.178.1.0/24

MapPublicIpOnLaunch: "true"

AvailabilityZone: "us-east-1a"

PrivateSubnet1:

Type: AWS::EC2::Subnet

Properties:

VpcId: !Ref MyVPC

CidrBlock: 192.178.2.0/24

MapPublicIpOnLaunch: "false"

AvailabilityZone: "us-east-1b"

PrivateSubnet2:

Type: AWS::EC2::Subnet

Properties:

VpcId: !Ref MyVPC

CidrBlock: 192.178.3.0/24

MapPublicIpOnLaunch: "false"

AvailabilityZone: "us-east-1c"

IntGateway:

Type: AWS::EC2::InternetGateway

Attachgateway:

Type: AWS::EC2::VPCGatewayAttachment

Properties:

VpcId: !Ref MyVPC

InternetGatewayId: !Ref IntGateway

PublicRouteTable:

Type: AWS::EC2::RouteTable

Properties:

VpcId: !Ref MyVPC

PublicRoute:

Type: AWS::EC2::Route

DependsOn: Attachgateway  
Properties:  
RouteTableId:  
Ref: PublicRouteTable  
DestinationCidrBlock: 0.0.0.0/0  
GatewayId: !Ref IntGateway

PublicSubnetRouteTableAssociation:  
Type: AWS::EC2::SubnetRouteTableAssociation  
Properties:  
SubnetId: !Ref PublicSubnet  
RouteTableId: !Ref PublicRouteTable

PrivateRouteTable1:  
Type: AWS::EC2::RouteTable  
Properties:  
VpcId:  
Ref: MyVPC

PrivateRouteTable2:  
Type: AWS::EC2::RouteTable  
Properties:  
VpcId: !Ref MyVPC

PrivateSubnetRouteTableAssociation1:  
Type: AWS::EC2::SubnetRouteTableAssociation  
Properties:  
SubnetId: !Ref PrivateSubnet1  
RouteTableId: !Ref PrivateRouteTable1

PrivateSubnetRouteTableAssociation2:  
Type: AWS::EC2::SubnetRouteTableAssociation  
Properties:  
SubnetId: !Ref PrivateSubnet2  
RouteTableId: !Ref PrivateRouteTable2

**In this section we have created security group for allowing SSH port for EC2 instance and Port 3306 for Database Instance.**

Securitygroup:  
Type: AWS::EC2::SecurityGroup  
Properties:  
GroupDescription: Allow SSH and Mysql  
SecurityGroupIngress:  
- IpProtocol: tcp

FromPort: 22  
ToPort: 22  
CidrIp: 0.0.0.0/0

- IpProtocol: tcp  
FromPort: 3306  
ToPort: 3306  
CidrIp: 0.0.0.0/0  
VpcId: !Ref MyVPC

**In this section we have created EC2 instance and wrote the user data for installing mysql on bootstrap for accessing database.**

MyEC2:

Type: AWS::EC2::Instance  
Properties:  
ImageId: "ami-05fa00d4c63e32376"  
InstanceType: "t2.micro"  
KeyName: "08-09-2022"  
SecurityGroupIds:  
- !Ref Securitygroup  
SubnetId: !Ref PublicSubnet  
UserData:  
Fn::Base64: !Sub |  
#!/bin/bash  
# Update all packages  
yum -y update  
# Install mysql client  
yum -y install mysql

**In this section we have created MySQL Database with customised private subnets username "mysqlpdb" and Password "mysqlpdb20200". Also we have created subnet group containing 2 private subnets.**

RDSDB:

Type: AWS::RDS::DBInstance  
Properties:  
AllocatedStorage: 10  
DBInstanceClass: db.t2.micro  
Engine: MySQL  
EngineVersion : "5.7"  
MasterUsername: mysqlpdb  
MasterUserPassword: mysqlpdb2022  
Tags:  
- Key: Name

Value: Master Database

DBSecurityGroups:

- !Ref DbSecurityGroup

DBSubnetGroupName : !Ref DbSubnetgroup

DbSecurityGroup:

Type: AWS::RDS::DBSecurityGroup

Properties:

EC2VpcId: !Ref MyVPC

GroupDescription: "Ingress for Amazon EC2 security group"

DBSecurityGroupIngress:

- EC2SecurityGroupId: !Ref Securitygroup

DbSubnetgroup:

Type: AWS::RDS::DBSubnetGroup

Properties:

DBSubnetGroupDescription: Private subnet group for Database

DBSubnetGroupName: mysubnetgroup

SubnetIds:

- !Ref PrivateSubnet1

- !Ref PrivateSubnet2

Outputs:

VPCId:

Description: "VPCId of VPC"

Value: !Ref "MyVPC"

PublicIP:

Description: Public IP of EC2 Instance

Value: !GetAtt MyEC2.PublicIp

aws

Services

Search for services, features, blogs, docs, and more

[Alt+S]

N. Virginia

Arun@986041421187

CloudFormation > Stacks > VPC-EC2-RDS

Stacks (1)

Filter by stack name

Active View nested

VPC-EC2-RDS  
2022-09-15 11:32:34 UTC+0530  
CREATE\_COMPLETE

Stack info Events Resources Outputs Parameters Template Change sets

Events (54)

Search events

Timestamp	Logical ID	Status	Status reason
2022-09-15 11:33:59 UTC+0530	MyEC2	CREATE_COMPLETE	-
2022-09-15 11:33:32 UTC+0530	PublicRoute	CREATE_COMPLETE	-
2022-09-15 11:33:25 UTC+0530	PrivateSubnetRouteTableAssociation2	CREATE_COMPLETE	-
2022-09-15 11:33:16 UTC+0530	PublicRoute	CREATE_IN_PROGRESS	Resource creation Initiated
2022-09-15 11:33:15 UTC+0530	PublicRoute	CREATE_IN_PROGRESS	-
2022-09-15 11:33:15 UTC+0530	PublicSubnetRouteTableAssociation	CREATE_COMPLETE	-

more [Alt+S]

N. Virginia Arun@986041421187

Stack info Events Resources Outputs Parameters Template Change sets

Resources (18)

Search resources

Logical ID	Physical ID	Type	Status
Attachgateway	VPC-E-Attac-41CWDF0UEELI	AWS::EC2::VPCGatewayAttachment	CREATE_COMPLETE
DbSecurityGroup	vpc-ec2-rds-dbsecuritygroup-k7t6rhd4xxha	AWS::RDS::DBSecurityGroup	CREATE_COMPLETE
DbSubnetgroup	mysubnetgroup	AWS::RDS::DBSubnetGroup	CREATE_COMPLETE
IntGateway	igw-0c7bc0ee28e83dafa	AWS::EC2::InternetGateway	CREATE_COMPLETE

aws

Services

Search for services, features, blogs, docs, and more

[Alt+S]

N. Virginia

Arun@986041421187

CloudFormation > Stacks > VPC-EC2-RDS

Stacks (1)

Filter by stack name

Active View nested

VPC-EC2-RDS  
2022-09-15 11:32:34 UTC+0530  
CREATE\_COMPLETE

VPC-EC2-RDS

Delete Update Stack actions Create stack

Stack info Events Resources Outputs Parameters Template Change sets

Outputs (2)

Search outputs

Key	Value	Description	Export name
PublicIP	54.175.36.222	Public IP of EC2 Instance	-
VPCId	vpc-029305d02952784a4	VPCId of VPC	-

Search for services, features, blogs, docs, and more

[Alt+S]

N. Virginia

Arun@986041421187

Your VPCs (1/2) Info

Filter VPCs

Actions Create VPC

	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP
<input type="checkbox"/>	DEFAULT	vpc-03858f2d50a4bce0a	Available	172.31.0.0/16	-	dopt-004de15ce9e77a300
<input checked="" type="checkbox"/>	CF vpc	vpc-029305d02952784a4	Available	192.178.0.0/16	-	dopt-004de15ce9e77a300

Details

VPC ID vpc-029305d02952784a4	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-004de15ce9e77a300	Main route table rtb-0a6d0f113de39c733	Main network ACL acl-0765a72514e4a244c
Default VPC No	IPv4 CIDR 192.178.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -
Route 53 Resolver DNS Firewall rule groups	Owner ID 986041421187		



for services, features, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187

EC2 > Instances > i-00126965a8bf1d6e9

### Instance summary for i-00126965a8bf1d6e9 [Info](#)

Updated less than a minute ago

Instance ID  
i-00126965a8bf1d6e9

IPv6 address  
-

Hostname type  
IP name: ip-192-178-1-121.ec2.internal

Answer private resource DNS name  
-

Auto-assigned IP address  
54.175.36.222 [Public IP]

IAM Role  
-

Public IPv4 address  
54.175.36.222 | [open address](#)

Instance state  
Running

Private IP DNS name (IPv4 only)  
ip-192-178-1-121.ec2.internal

Instance type  
t2.micro

VPC ID  
vpc-029305d02952784a4

Subnet ID  
subnet-04ad79c8104c69ae4

Private IPv4 addresses  
192.178.1.121

Public IPv4 DNS  
-

Elastic IP addresses  
-

AWS Compute Optimizer finding  
Opt-in to AWS Compute Optimizer for recommendations.  
[Learn more](#)

Auto Scaling Group name  
-

[Details](#) | [Security](#) | [Networking](#) | [Storage](#) | [Status checks](#) | [Monitoring](#) | [Tags](#)

for services, features, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187

### vpc-ec2-rds-rdsdb-eqihphozji7j

[Modify](#) [Actions](#)

#### Summary

DB identifier vpc-ec2-rds-rdsdb-eqihphozji7j	CPU 5.67%	Status Available	Class db.t2.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ us-east-1b

[Connectivity & security](#) | [Monitoring](#) | [Logs & events](#) | [Configuration](#) | [Maintenance & backups](#) | [Tags](#)

#### Connectivity & security

<b>Endpoint &amp; port</b> Endpoint vpc-ec2-rds-rdsdb-eqihphozji7j.cdjjrqixwxfb.us-east-1.rds.amazonaws.com Port 3306	<b>Networking</b> Availability Zone us-east-1b VPC vpc-029305d02952784a4 Subnet group	<b>Security</b> VPC security groups rds-vpc-ec2-rds-dbsecuritygroup-k7t6rhd4xxha-6jc4 (sg-05cec6ea5ec3e49cd) Active Publicly accessible
---	--	---

**MasterUsername: mysqlpdb**

**MasterUserPassword: mysqlpdb2022**

**Endpoint : vpc-ec2-rds-rdsdb-eqihphozji7j.cdjjrqixwxfb.us-east-1.rds.amazonaws.com**

## Connect to EC2

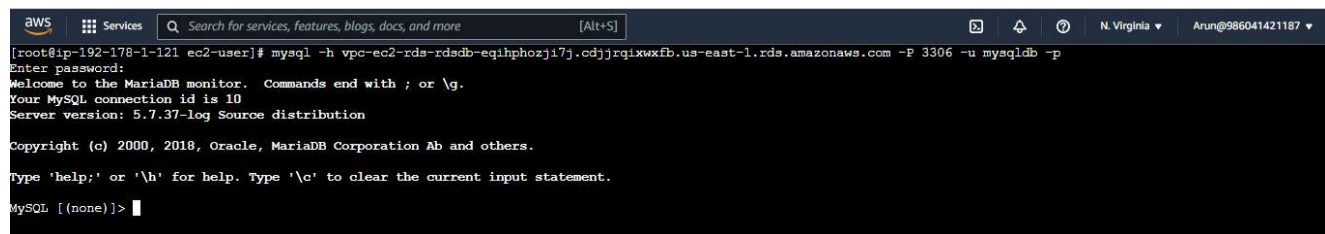
Check for Mysql version      `mysql --version`

```
[root@ip-192-178-1-121 ec2-user]#  
[root@ip-192-178-1-121 ec2-user]# mysql --version  
mysql Ver 15.1 Distrib 5.5.68-MariaDB, for Linux (x86_64) using readline 5.1  
[root@ip-192-178-1-121 ec2-user]#
```

## Connect to database

`mysql -h <endpoint> -P 3306 -u <username> -p`

`mysql -h vpc-ec2-rds-rdsdb-eqihphozji7j.cdjjrqixwxfb.us-east-1.rds.amazonaws.com -P 3306 -u mysqlpdb -p`



The screenshot shows an AWS console terminal window. The top bar includes the AWS logo, a 'Services' menu, a search bar, and the user's location (N. Virginia) and ID (Arun@986041421187). The terminal output shows the user running the command `mysql -h vpc-ec2-rds-rdsdb-eqihphozji7j.cdjjrqixwxfb.us-east-1.rds.amazonaws.com -P 3306 -u mysqlpdb -p`. The prompt 'Enter password:' is shown, followed by the user's input. The terminal then displays the following messages: 'Welcome to the MariaDB monitor. Commands end with ; or \g.', 'Your MySQL connection id is 10', 'Server version: 5.7.37-log Source distribution', 'Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.', and 'Type \'help;\' or \'h\' for help. Type \'c\' to clear the current input statement.' The prompt 'MySQL [(none)]>' is shown at the bottom.

```
aws Services Search for services, features, blogs, docs, and more [Alt+S] N. Virginia Arun@986041421187  
[root@ip-192-178-1-121 ec2-user]# mysql -h vpc-ec2-rds-rdsdb-eqihphozji7j.cdjjrqixwxfb.us-east-1.rds.amazonaws.com -P 3306 -u mysqlpdb -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MySQL connection id is 10  
Server version: 5.7.37-log Source distribution  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or 'h' for help. Type 'c' to clear the current input statement.  
MySQL [(none)]>
```