

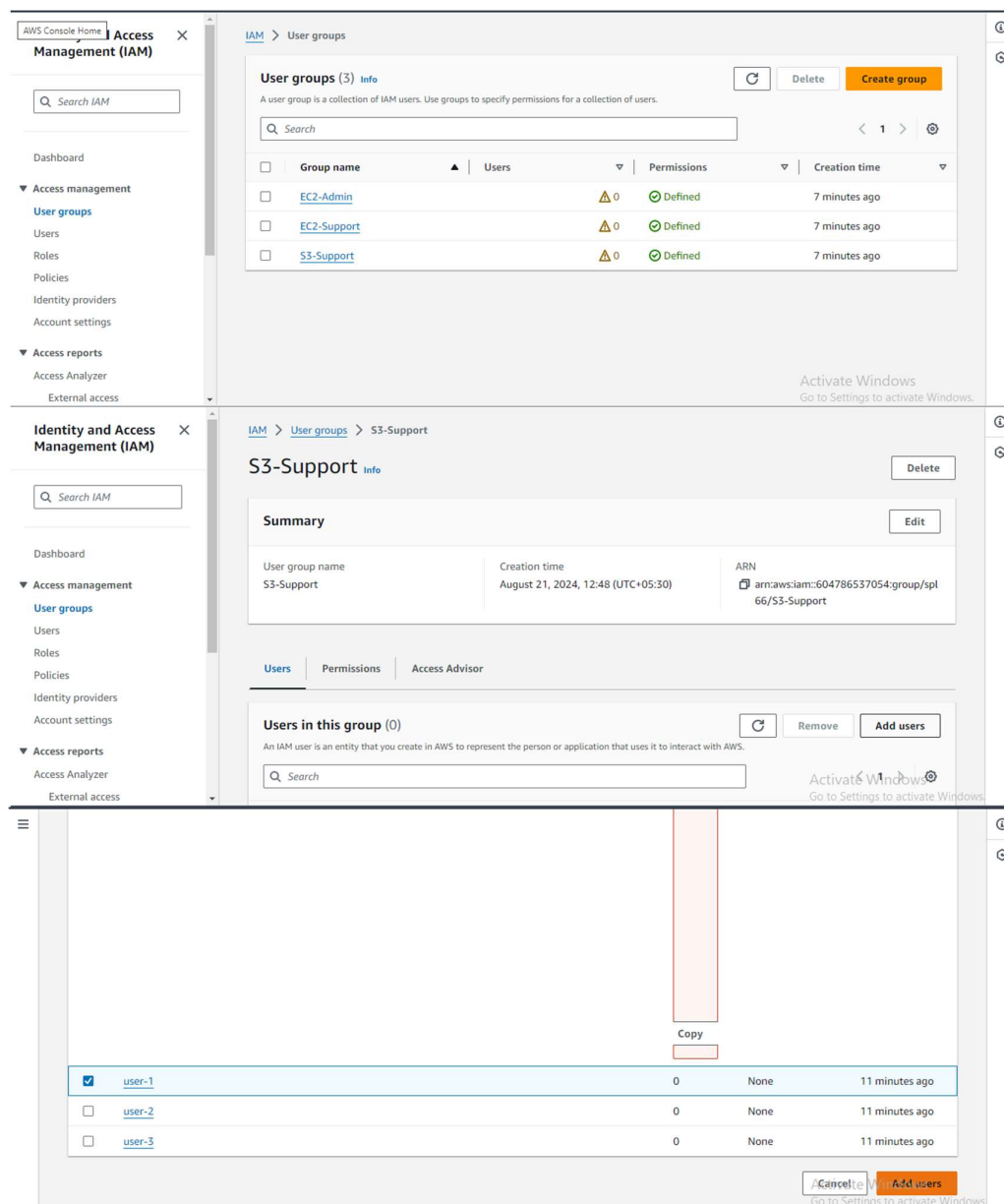
Practical-6

Aim: Introduction to AWS Identity and Access Management (IAM).

(Here we already have 3 Users Created and 3 Groups Created i.e user-1, user-2, user-3 and EC2-Admin, EC2-Support and S3-Support)

Step 1: Adding User 1 in S3 support Group.

In the left navigation pane, choose User groups. Choose the S3-Support group link. Choose the Users tab. In the Users tab, choose Add users.

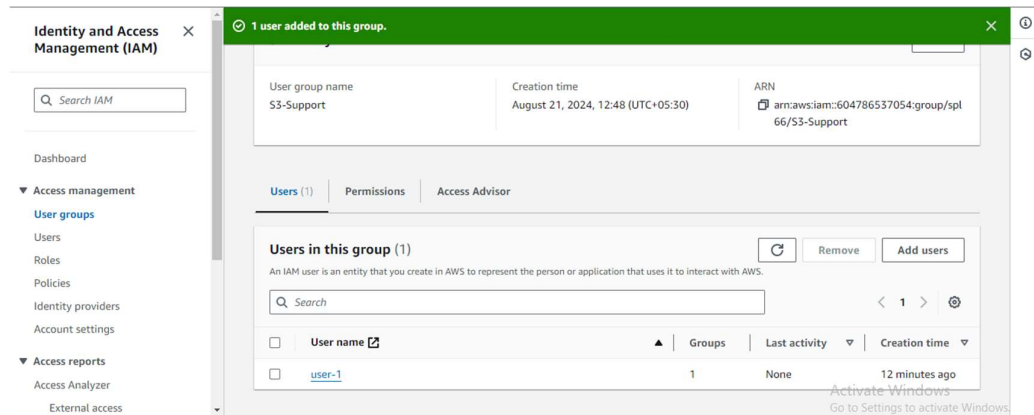


The screenshot shows the AWS IAM console interface. The left navigation pane is open, showing the 'Access management' section with 'User groups' selected. The main content area displays the 'User groups (3)' list. The 'S3-Support' group is selected, and the 'Users' tab is active. The 'Add users' button is highlighted, and a modal window is open showing a list of existing users: 'user-1', 'user-2', and 'user-3'. The 'user-1' checkbox is checked, indicating it is being added to the group.

Group name	Users	Permissions	Creation time
EC2-Admin	0	Defined	7 minutes ago
EC2-Support	0	Defined	7 minutes ago
S3-Support	0	Defined	7 minutes ago

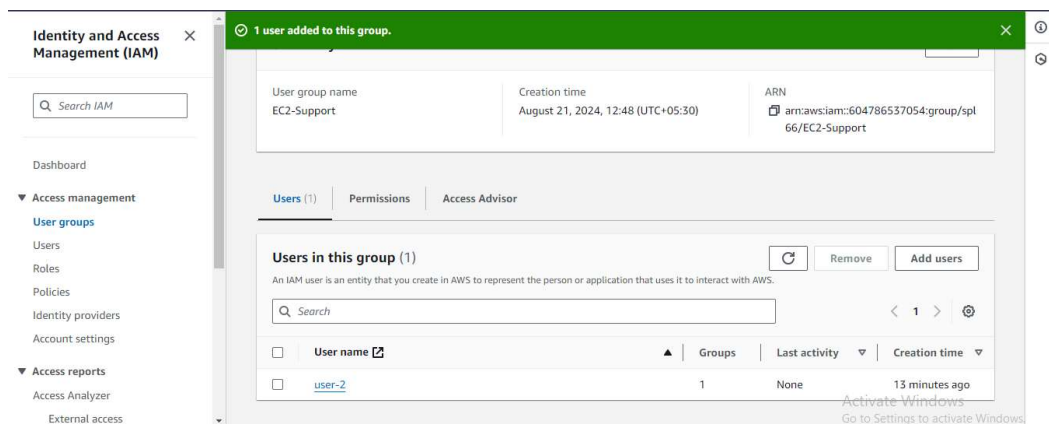
S3-Support Summary			
User group name	Creation time	ARN	
S3-Support	August 21, 2024, 12:48 (UTC+05:30)	arn:aws:iam::604786537054:group/spl-66/S3-Support	

Users in this group (0)			
<input checked="" type="checkbox"/>	user-1	0	None
<input type="checkbox"/>	user-2	0	None
<input type="checkbox"/>	user-3	0	None

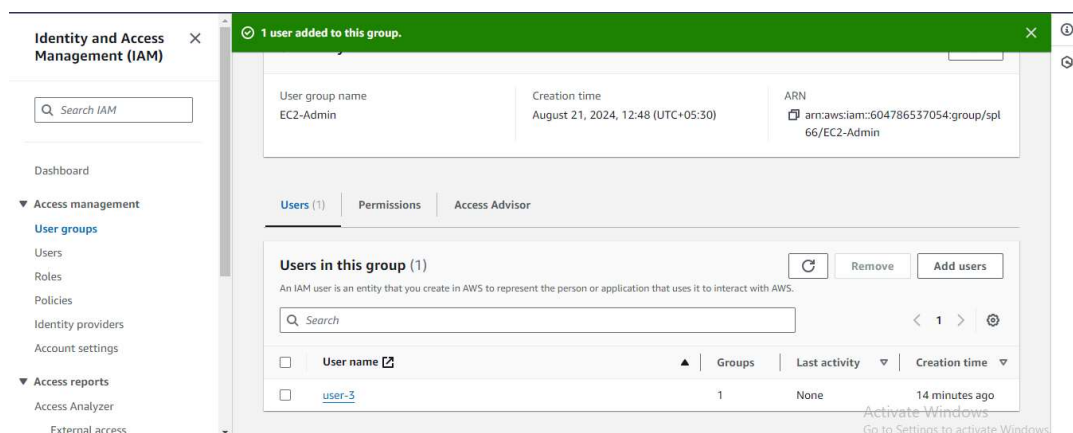


Step 2: Adding User 2 in the EC2 Support.

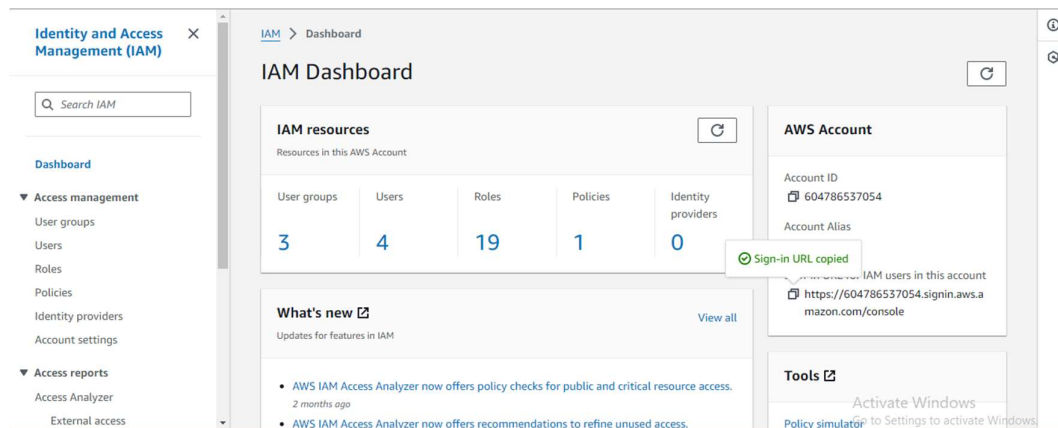
Using similar steps to the ones above, add user-2 to the EC2-Support group



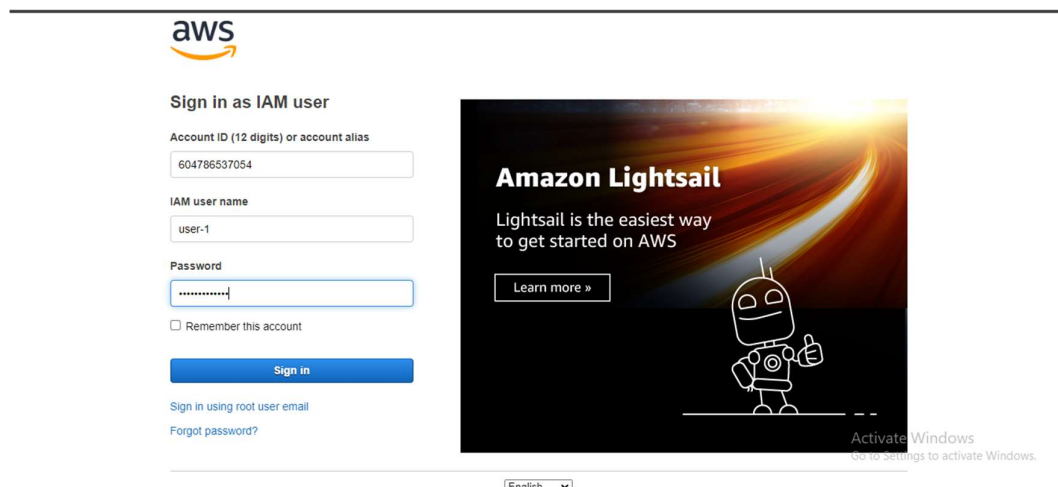
Step 3: Similarly Add User 3 in EC2-Admin.

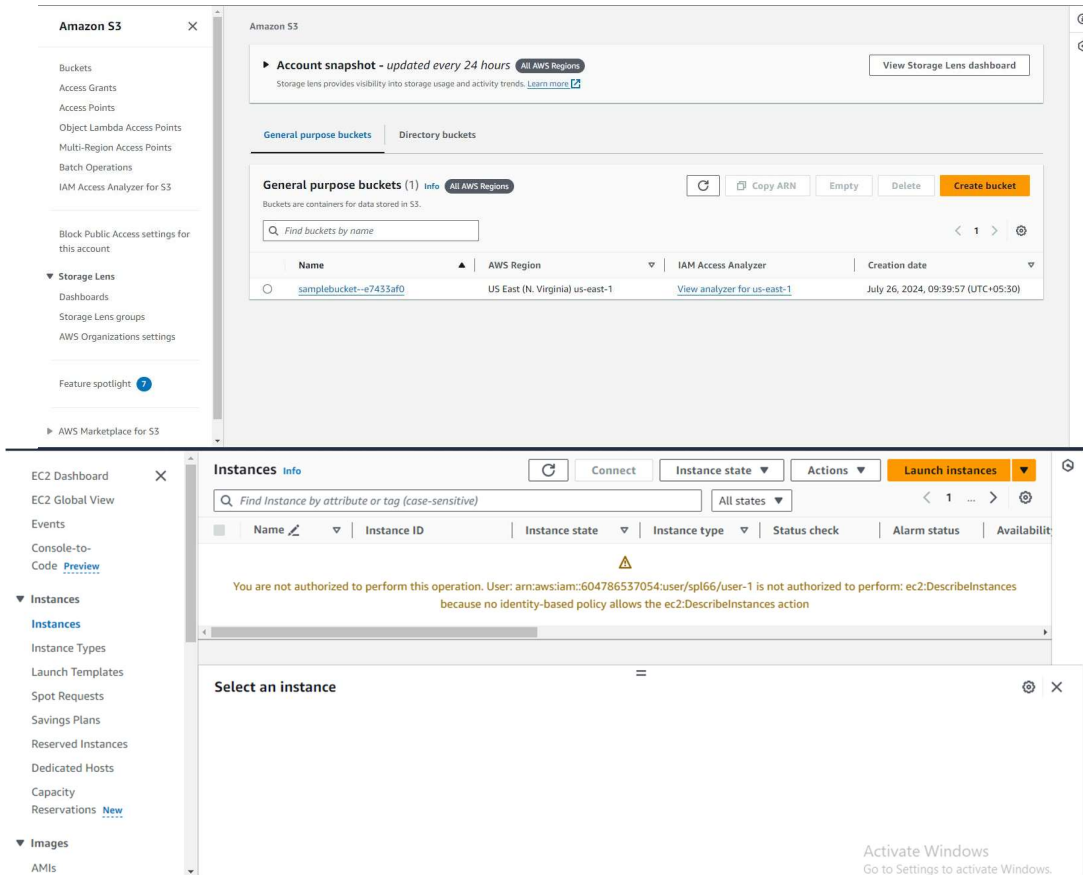


Step 4: Go to Dashboard and Copy the User Sign in Link and paste in Private window.



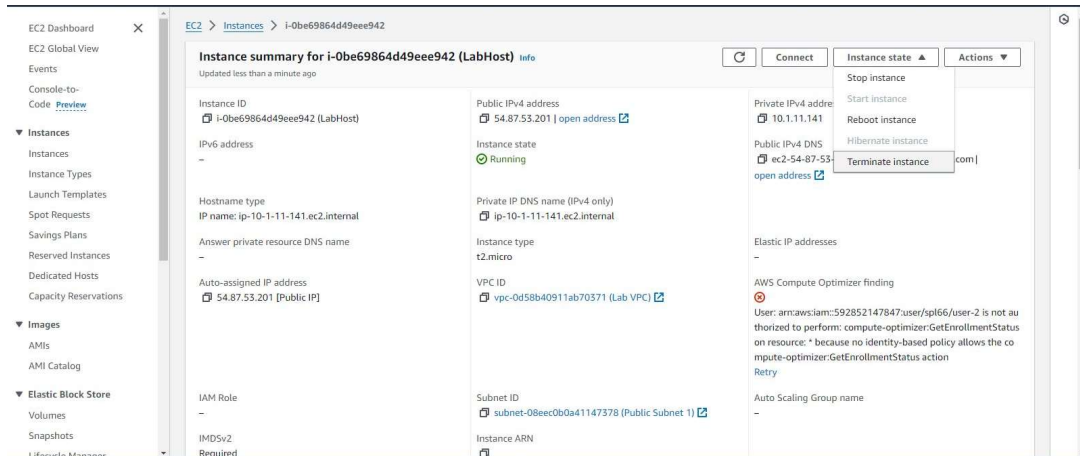
Step 5: Now Enter User-1 Id and Password in the console opened in private window, to check the permissions of User-1 first check for s3 bucket it will show up then try to create an EC2 Instance, will see an error message because user-1 don't have permission to create instance as he is part of S3-Support group.





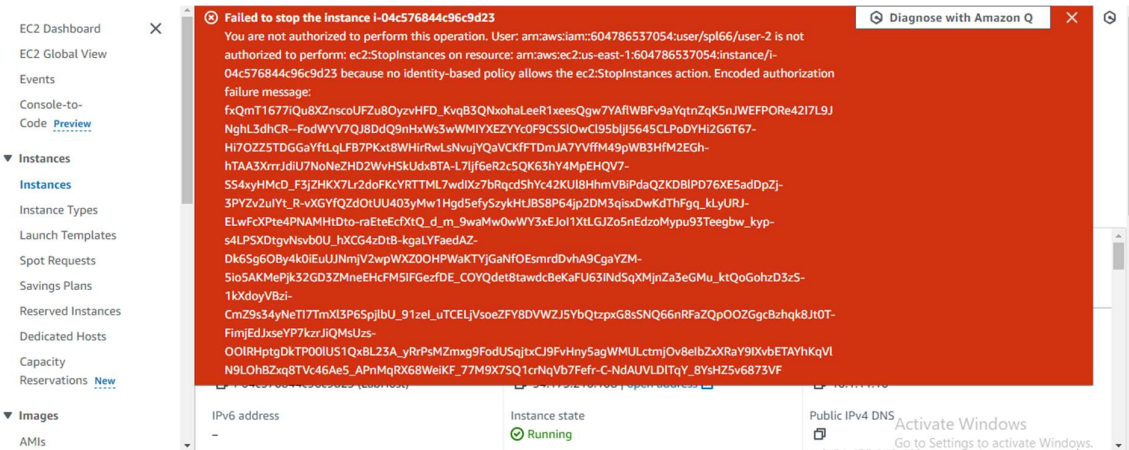
The screenshot displays two panels of the AWS Management Console. The top panel shows the 'Amazon S3' console with the 'General purpose buckets' tab selected. It lists a bucket named 'samplebucket-e7433af0' in the 'US East (N. Virginia) us-east-1' region. The bottom panel shows the 'EC2 Dashboard' with the 'Instances' tab selected. A message indicates that the user is not authorized to perform the 'ec2:DescribeInstances' action. A 'Select an instance' dialog box is open, and a Windows activation watermark is visible in the bottom right corner.

Step 6: Similarly Enter the user-2 Id a password in the console opened in private window and check for EC2 support permission which refers to only reading the EC2.

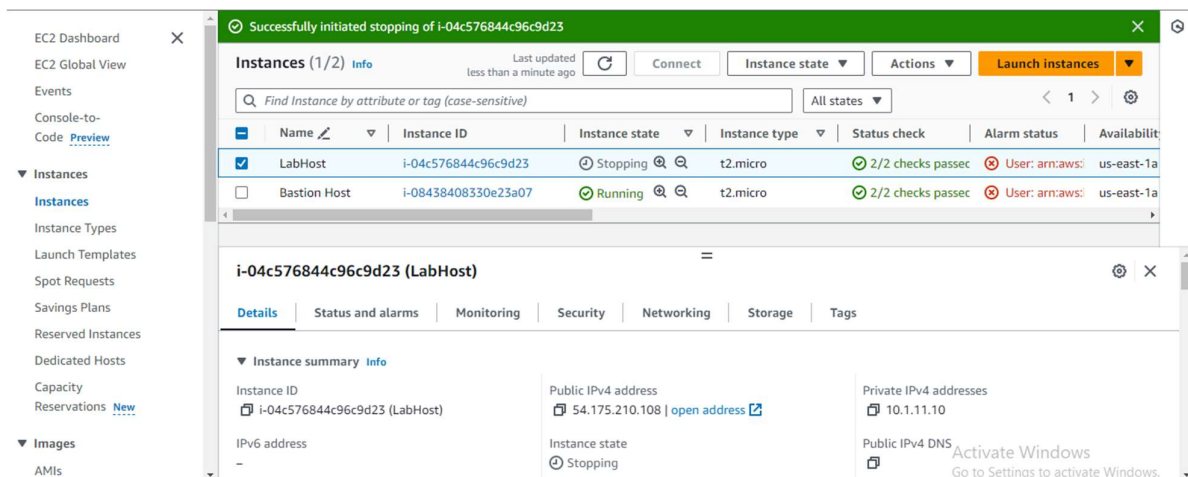


The screenshot shows the 'Instance summary' page for the instance 'i-0be69864d49eee942 (LabHost)'. The instance is in the 'Running' state. Key details include: Public IPv4 address '54.87.53.201', Private IPv4 address '10.1.11.141', Instance type 't2.micro', VPC ID 'vpc-0d58b40911ab70371', and Subnet ID 'subnet-08ee0ba041147378'. A message indicates that the user is not authorized to perform the 'compute-optimizer:GetEnrollmentStatus' action.

Step 7: Check the permission of User 2, Try to stop the instance Lab-Host, you will get an error message as the user is part of EC2-Support that only has Read Only permission.



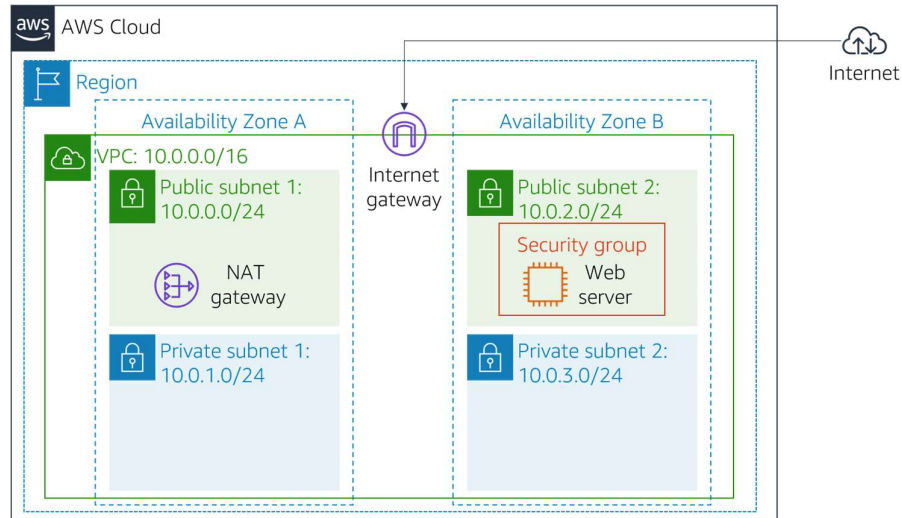
Step 8: Now enter user-3 Id and password and check the permissions for User 3 Try to stop the instance and it will be stopped because he part of EC2-Admin group and has admin privileges.



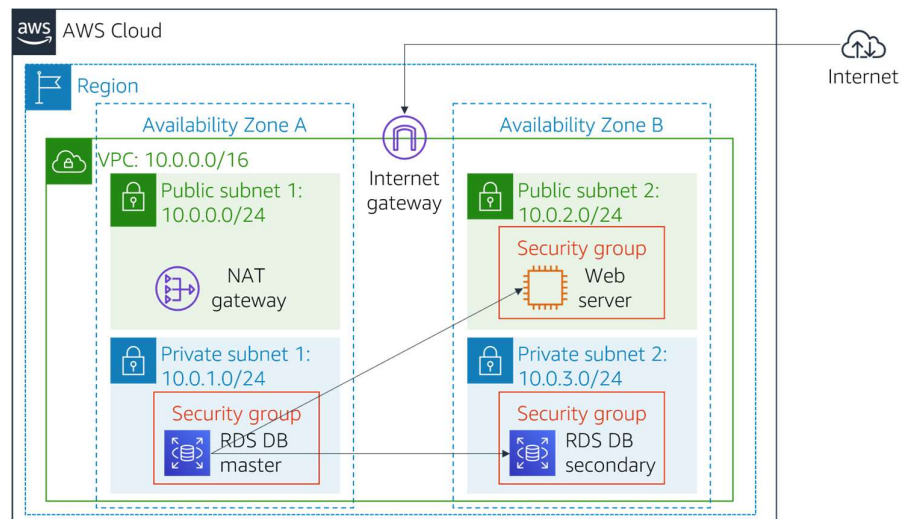
Practical-5

Aim: Build Your DB Server and Interact with Your DB Using an App.

Already Configured VPC:



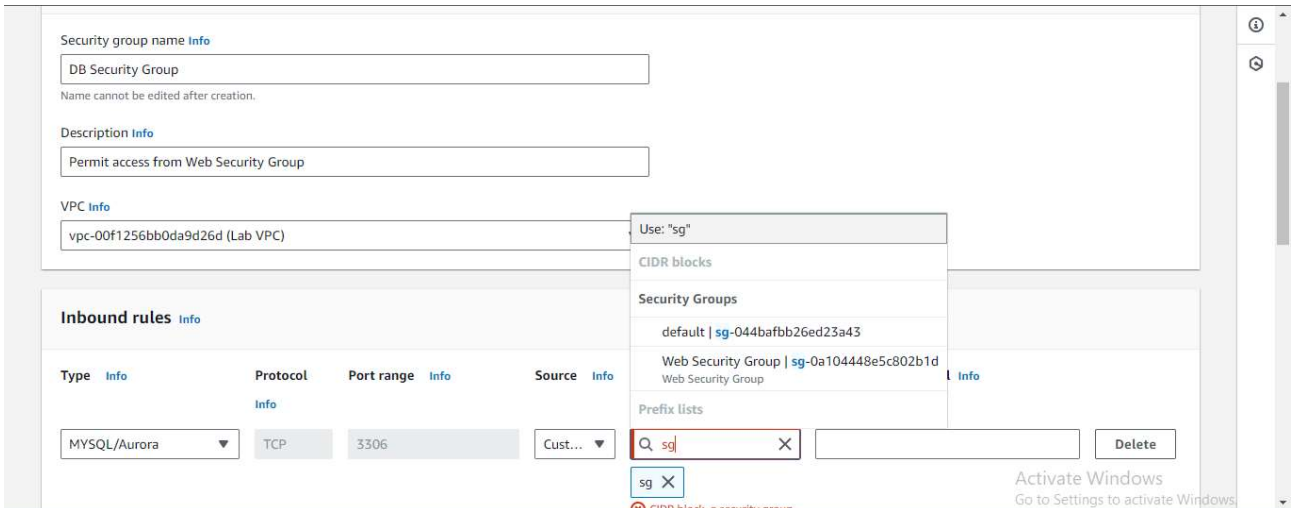
Additional Configuration We're going to Perform:



Step 1: Create security group for the RDS DB instance, go to VPC and security groups then choose create security group and provide below given specifications, and create it.

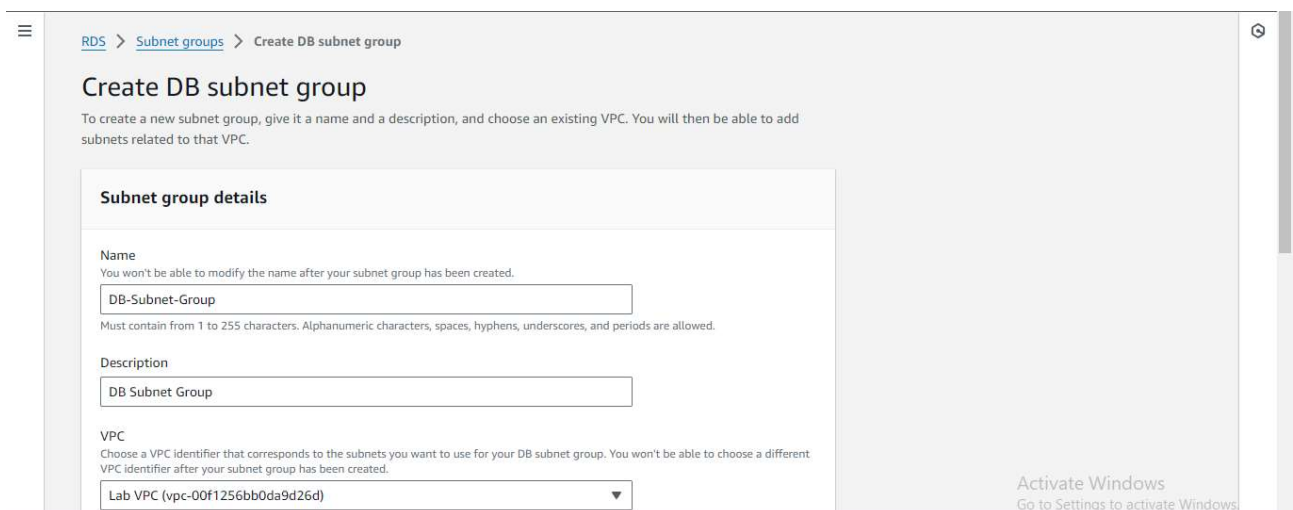
-Select the create VPC (here Lab VPC).

-Add an inbound rule which configures database security group to permit inbound traffic on port 3306 from any EC2 instance that is associated with the web security group. Here, as we are using MySQL DB engine, we will select relevant type and source as Web Security Group.



The screenshot shows the AWS Management Console 'Create security group' page. The 'Security group name' is 'DB Security Group'. The 'Description' is 'Permit access from Web Security Group'. The 'VPC' is 'vpc-00f1256bb0da9d26d (Lab VPC)'. The 'Inbound rules' section shows a rule for 'MySQL/Aurora' on 'TCP' port '3306' with source 'Web Security Group | sg-0a104448e5c802b1d'. A dropdown menu is open showing 'Use: "sg"', 'CIDR blocks', and 'Security Groups'.

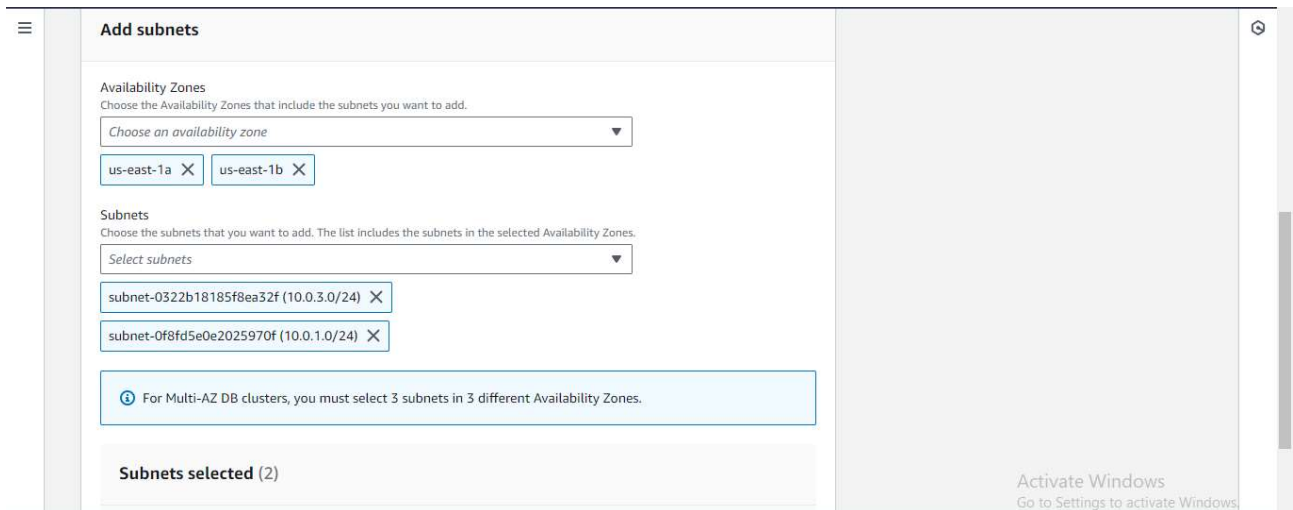
Step 2: Create a DB subnet group, go to RDS from services then choose subnet groups from left navigation pane, click on create DB subnet group and provide specifications as shown in screenshot below.



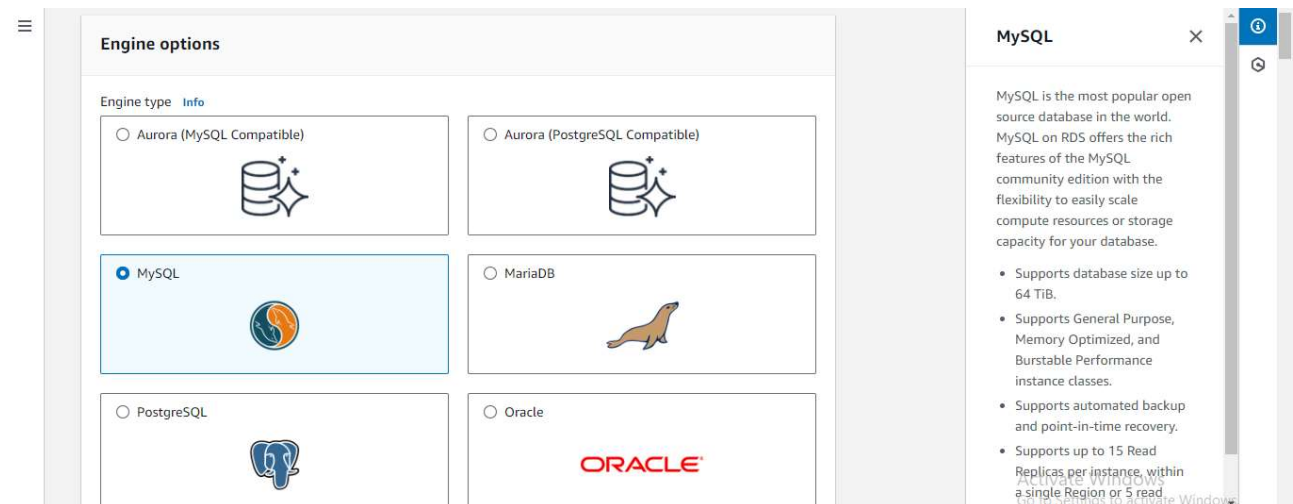
The screenshot shows the AWS Management Console 'Create DB subnet group' page. The 'Name' is 'DB-Subnet-Group'. The 'Description' is 'DB Subnet Group'. The 'VPC' is 'Lab VPC (vpc-00f1256bb0da9d26d)'. The page includes instructions on naming and VPC selection.

-We create DB subnet group in order to create multi availability zone deployment, amazon RDS provides facility of replication in different availability zone for availability and durability of service.

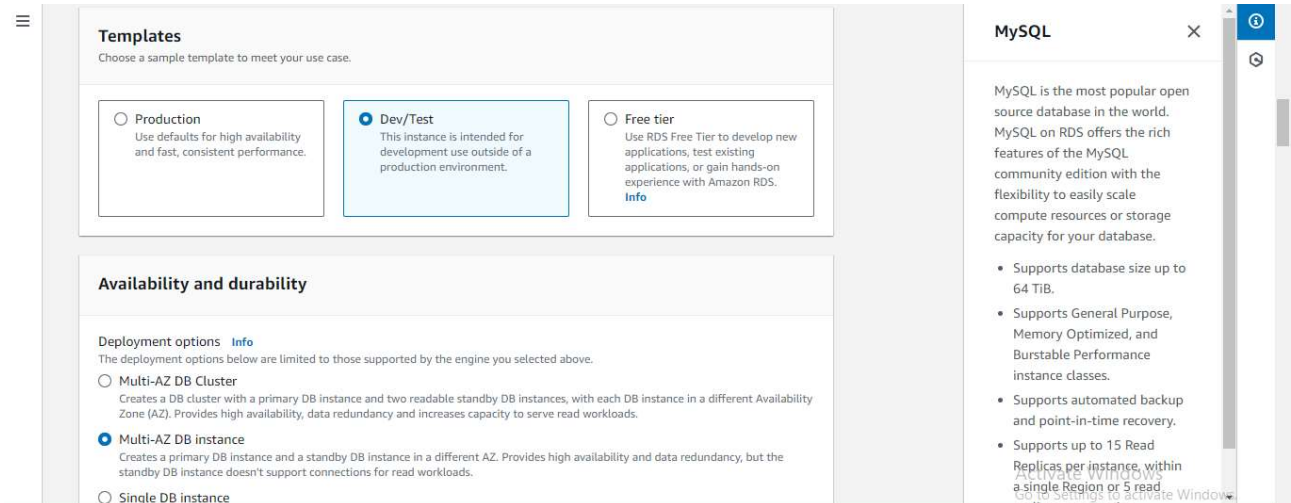
-Select AZs and Subnets in which you want to create RDS instances or to have database service as per below screenshot and click on create.



Step 3: Create an amazon RDS DB instance, select MySQL from Engine Options.



-Select template as Dev/Test refers to development and testing.



Templates
Choose a sample template to meet your use case.

- ☐ **Production**
Use defaults for high availability and fast, consistent performance.
- ☒ **Dev/Test**
This instance is intended for development use outside of a production environment.
- ☐ **Free tier**
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

Availability and durability

Deployment options [Info](#)
The deployment options below are limited to those supported by the engine you selected above.

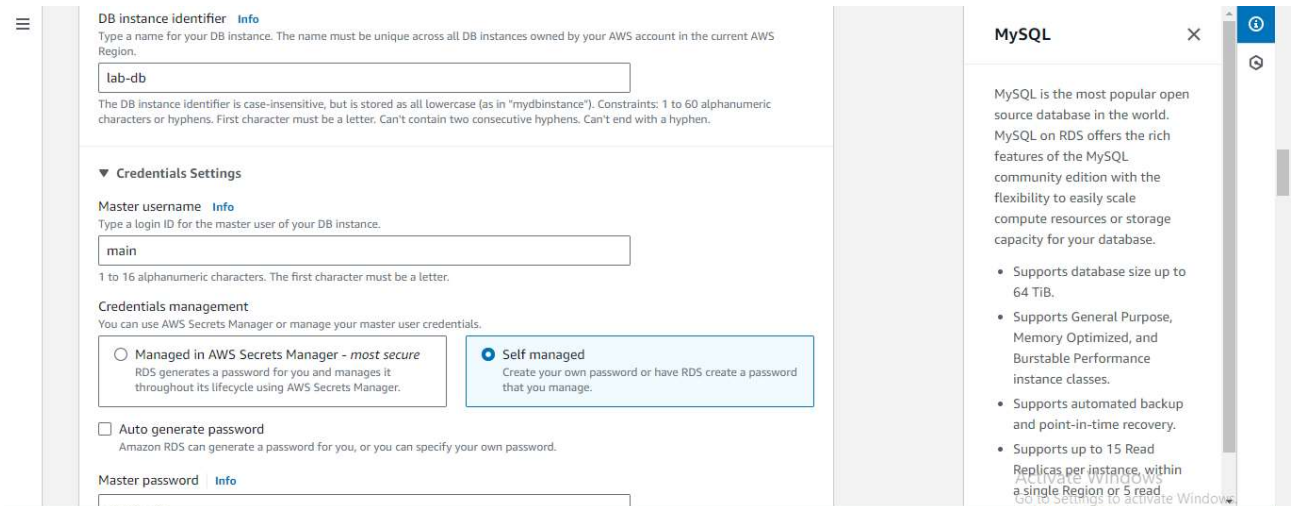
- ☐ **Multi-AZ DB Cluster**
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.
- ☒ **Multi-AZ DB instance**
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.
- ☐ **Single DB instance**

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas across multiple Regions.

-Provide credentials details as given below in screenshot.



DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

lab-db

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ Credentials Settings

Master username [Info](#)
Type a login ID for the master user of your DB instance.

main

1 to 16 alphanumeric characters. The first character must be a letter.

Credentials management
You can use AWS Secrets Manager or manage your master user credentials.

- ☐ **Managed in AWS Secrets Manager - most secure**
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.
- ☒ **Self managed**
Create your own password or have RDS create a password that you manage.

☐ **Auto generate password**
Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

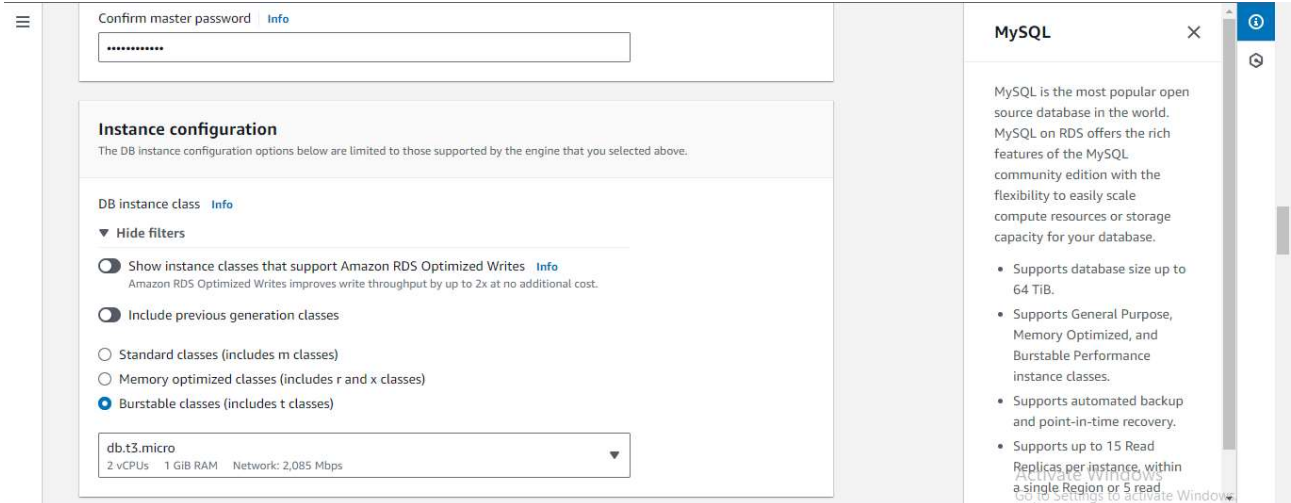
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-In instance configuration select burstable classes and db.t3.micro for free tier access.



Confirm master password [Info](#)

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class [Info](#)

▼ Hide filters

☒ Show instance classes that support Amazon RDS Optimized Writes [Info](#)
 Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

☐ Include previous generation classes

☐ Standard classes (includes m classes)

☐ Memory optimized classes (includes r and x classes)

☒ Burstable classes (includes t classes)

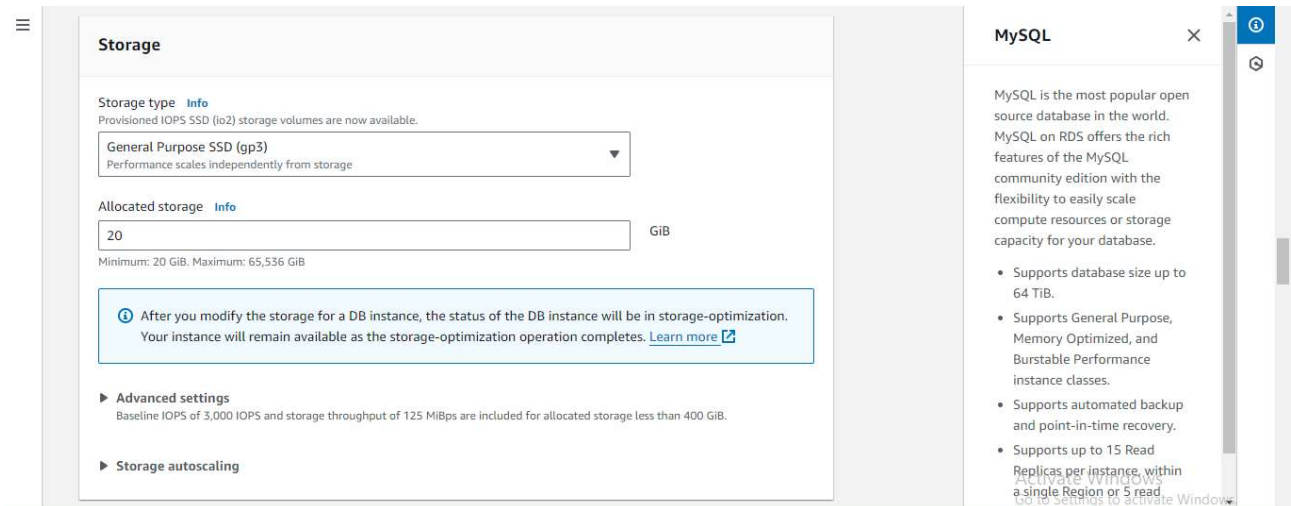
db.t3.micro
 2 vCPUs 1 GiB RAM Network: 2,085 Mbps

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-In storage set general purpose storage type and allocate 20 GB of storage.



Storage

Storage type [Info](#)
 Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)
 Performance scales independently from storage

Allocated storage [Info](#)
 20 GiB
 Minimum: 20 GiB, Maximum: 65,536 GiB

ⓘ After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes. [Learn more](#)

► **Advanced settings**
 Baseline IOPS of 3,000 IOPS and storage throughput of 125 MiBps are included for allocated storage less than 400 GiB.

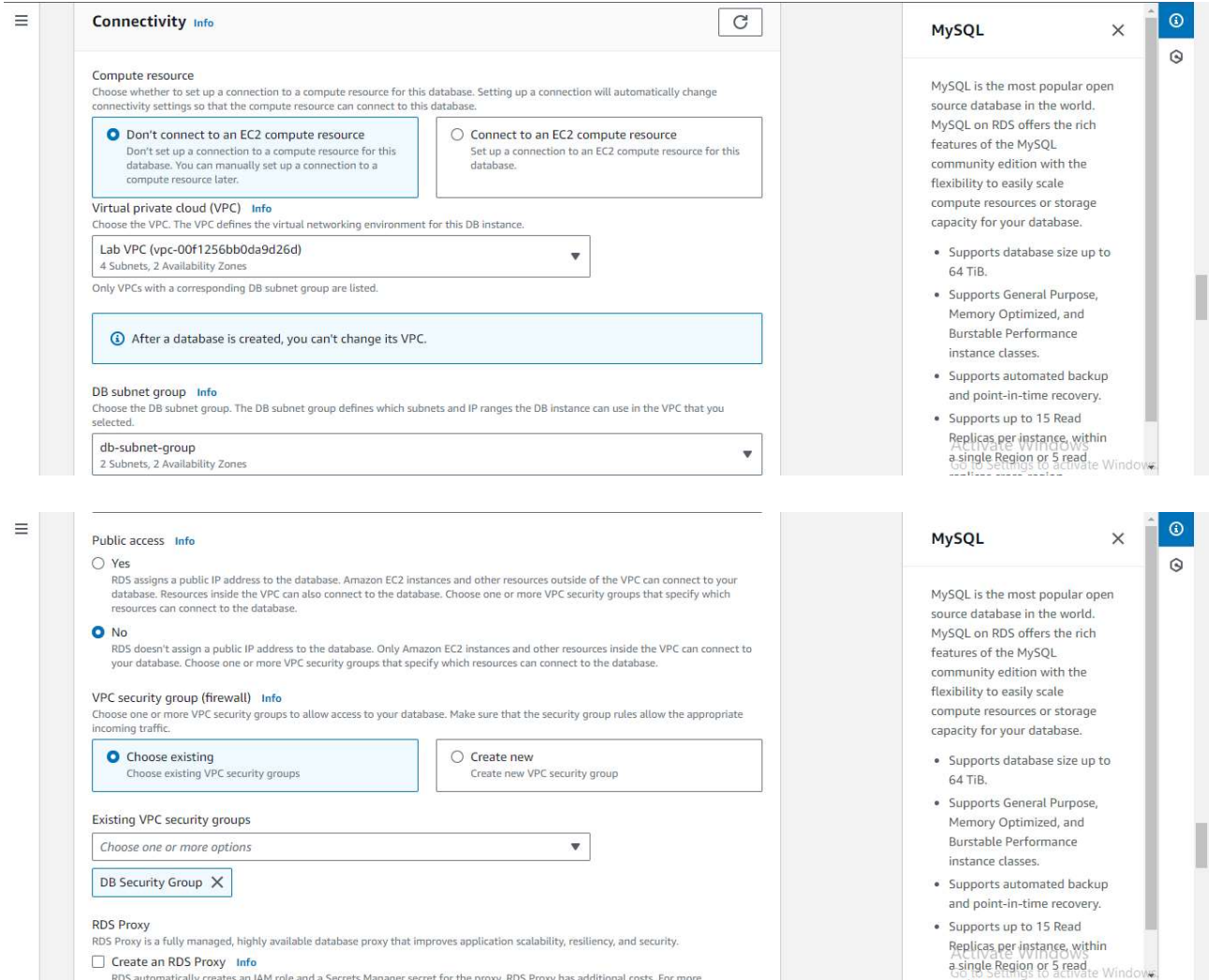
► **Storage autoscaling**

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- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas across multiple Regions.

-In connectivity, select Lab VPC and db-subnet-group created above and give no to public access with configuration of db security group.



The screenshot displays the AWS RDS console configuration for a new MySQL instance. The 'Connectivity' tab is active, showing options for 'Compute resource' (Don't connect to an EC2 compute resource), 'Virtual private cloud (VPC)' (Lab VPC), and 'DB subnet group' (db-subnet-group). The 'Public access' tab is also shown, with 'No' selected for public access. The 'VPC security group (firewall)' section shows 'Choose existing' selected, with 'DB Security Group' chosen from the dropdown. The 'RDS Proxy' section shows 'Create an RDS Proxy' unchecked.

Connectivity Info

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

☒ Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

☐ Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) Info
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Lab VPC (vpc-00f1256bb0da9d26d)
4 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

After a database is created, you can't change its VPC.

DB subnet group Info
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

db-subnet-group
2 Subnets, 2 Availability Zones

Public access Info

☐ Yes
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

☒ No
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

VPC security group (firewall) Info
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

☒ Choose existing
Choose existing VPC security groups

☐ Create new
Create new VPC security group

Existing VPC security groups
Choose one or more options

DB Security Group X

RDS Proxy
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

☐ Create an RDS Proxy Info
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more

MySQL

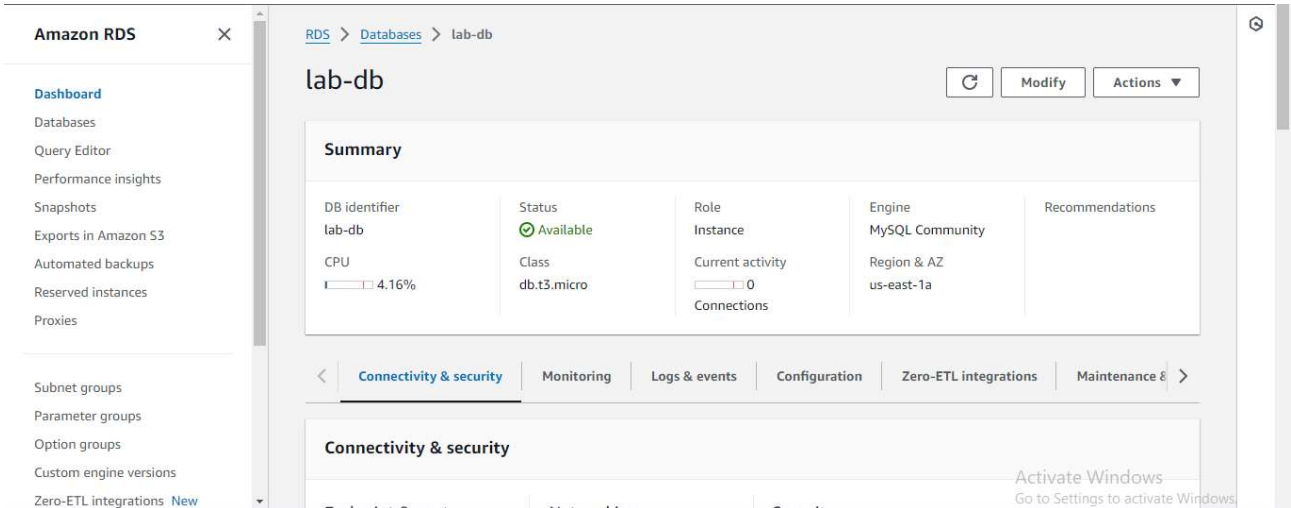
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- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas across multiple Regions.

-Also uncheck all the options like Enable advanced monitoring, Enable storage backup and Enable encryption to faster instance creation.

-As well as provide initial database name as lab.

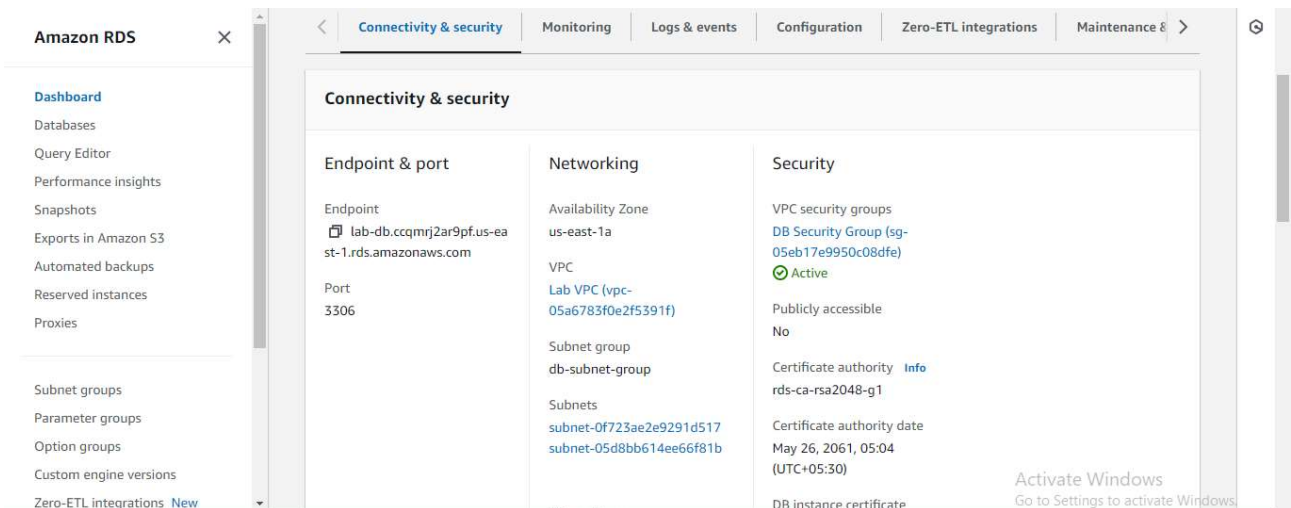
-As soon as status of DB instance gets available goto connectivity and security and copy the endpoint for further use



The screenshot shows the Amazon RDS console for instance 'lab-db'. The left sidebar contains navigation links: Dashboard, Databases, Query Editor, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, and Zero-ETL integrations. The main content area shows the 'lab-db' instance details under the 'Summary' tab. The instance is in an 'Available' state. Below the summary, there are tabs for 'Connectivity & security', 'Monitoring', 'Logs & events', 'Configuration', 'Zero-ETL integrations', and 'Maintenance & updates'. The 'Connectivity & security' tab is selected.

DB identifier	Status	Role	Engine	Recommendations
lab-db	Available	Instance	MySQL Community	

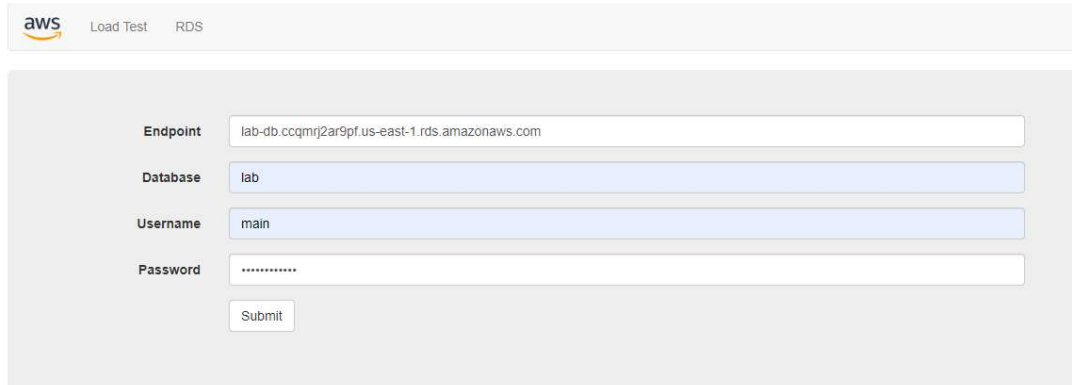
CPU	Class	Current activity	Region & AZ
4.16%	db.t3.micro	0	us-east-1a



The screenshot shows the 'Connectivity & security' tab for the 'lab-db' instance. It displays three main sections: Endpoint & port, Networking, and Security.

Endpoint & port	Networking	Security
Endpoint lab-db.ccqmrj2ar9pf.us-east-1.rds.amazonaws.com Port 3306	Availability Zone us-east-1a VPC Lab VPC (vpc-05a6783f0e2f5391f) Subnet group db-subnet-group Subnets subnet-0f723ae2e9291d517 subnet-05d8bb614ee66f81b	VPC security groups DB Security Group (sg-05eb17e9950c08dfe) Active Publicly accessible No Certificate authority rds-ca-rsa2048-g1 Certificate authority date May 26, 2061, 05:04 (UTC+05:30) DB instance certificate

Step 4: Interact with your database, copy the ip address of web server and paste it to the browser's new tab and click on RDS link and then it will ask for an endpoint and other credentials so provide it and then click on submit, you will find a page which prompts regarding command execution for database access.



aws Load Test RDS

Endpoint: lab-db.ccqmrj2ar9pf.us-east-1.rds.amazonaws.com

Database: lab


Username: main

Password: *****

Submit

Activate Windows
Go to Settings to activate Windows.

-Address book will be displayed and we can add, edit or remove contact from database via web server.



aws Load Test RDS

Address Book

Last name	First name	Phone	Email	Admin
Doe	Jane	010-110-1101	janed@someotheraddress.org	Add Contact Edit Remove
Johnson	Roberto	123-456-7890	roberto@someaddress.com	Edit Remove

Activate Windows
Go to Settings to activate Windows.