



How to Connect to Private subnet MySQL RDS over SSH with Bastian Host

Let's the Bastion & RDS Journey begins



Steps

1. Create a custom VPC

2. Create a MySQL RDS instance on the free tier

- It must be in the same VPC and subnet as the private ec2 instance

3. Using the private ec2 instance

- install the MySQL Client
- test that you can connect to the RDS instance using the MySQL client

4. Create a tunnel

- configure a tunnel connection from your macbook via the bastion to the private EC2 instance

5. From your Local system

- use the tunnel to connect to the RDS instance
- create a new database on the RDS instance
- create a table in the new database on the RDS instance

Create a custom VPC

As we know, VPC stands for Virtual Private Cloud, the first step of every project is to create a VPC so that on top of that VPC only we can create EC2 instances, databases or any other resources.

We can find a default VPC for every single region. That default VPC comes with multiple subnets, but the problem is all the subnets are public (Internet facing) only.

That is why it is always recommended to create our own default VPC and run all the resources there. Besides, in this project we need to create a VPC with multiple public & private subnets.

Public subnet resources are going to be Internet facing, however private subnet ones would be internal resources like if we need to provide Internet to the private subnet then we depend on additional services like NAT Gateway or NAT instances.

The screenshot shows the AWS Services dashboard. The 'Services' section header is at the top, followed by a 'See all 12 regions' link. Below this is a card for the 'VPC' service, which is described as 'Isolated Cloud Resources'. The card features a purple icon with a white cloud and a star. Under 'Top features', there are links for 'Your VPCs', 'Subnet', 'Route table', 'Internet gateway', and 'Egress-only internet gateways'. At the bottom of the card is a large orange button labeled 'Create VPC'. To the right of this button is a white button labeled 'Launch EC2 Instances'. A note below the buttons states: 'Note: Your Instances will launch in the US East region.' There is also a small 'X' icon in the top-left corner of the card.

VPC > Your VPCs > Create VPC

Create VPC Info

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances. Mouse over a resource to highlight the related resources.

VPC settings

Resources to create Info
Create only the VPC resource or the VPC and other networking resources.

VPC only VPC and more

Name tag auto-generation Info
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.
 Auto-generate

IPv4 CIDR block Info
Determine the starting IP and the size of your VPC using CIDR notation.
 65,536 IPs
CIDR block size must be between /16 and /28.

IPv6 CIDR block Info
 No IPv6 CIDR block
 Amazon-provided IPv6 CIDR block

Tenancy Info
 Default

Preview

VPC Show details
Your AWS virtual network

Subnets (4) Subnets within this VPC

Route tables (3) Route network traffic to resources

us-east-1a
 project-subnet-public1-us-east-1a
 project-subnet-private1-us-east-1a
 us-east-1b
 project-subnet-public2-us-east-1b
 project-subnet-private2-us-east-1b

project-rtb
 project-rtb
 project-rtb

AWS supports from /28 to /16 CIDR block subnets which decides the range or size of the VPC.

VPC > Your VPCs > **vpc-0fbacfba9e3734834**

vpc-0fbacfba9e3734834 / Bastion-RDS-vpc Actions ▾

Details Info

VPC ID <input type="text" value="vpc-0fbacfba9e3734834"/>	State Available	DNS hostnames Enabled	DNS resolution Enabled
Tenancy Default	DHCP option set <input type="text" value="dopt-98f655e2"/>	Main route table <input type="text" value="rtb-01f95ed69c6bc087d"/>	Main network ACL <input type="text" value="acl-0178e4823e8f8b568"/>
Default VPC No	IPv4 CIDR <input type="text" value="10.0.0.24"/>	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID <input type="text" value="646975365807"/>	

Resource map New

CIDRs **Flow logs** **Tags** **Integrations**

Resource map Info

VPC Show details
Your AWS virtual network

Subnets (4) Subnets within this VPC

Route tables (3) Route network traffic to resources

us-east-1a
 Public-Subnet-1a
 Private-Subnet-1a
 us-east-1b
 Public-Subnet-1b
 Private-Subnet-1b

Bastion-RDS-rtb-private
 rtb-01f95ed69c6bc087d
 Bastion-RDS-rtb-public

Was the resource map helpful today? X
Give us feedback as often as possible. We are improving continually.

Now, coming to the subnets

Subnets (4) Info						C	Actions ▾	Create subnet
						<input type="text"/> Find resources by attribute or tag		
Bastion-RDS-vpc X		Clear filters				◀ 1 ▶ @		
<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR			
<input type="checkbox"/>	Public-Subnet-1b	subnet-0aa0188a451210698	Available	vpc-0fbacfba9e3734834 Basti...	10.0.0.16/28			
<input type="checkbox"/>	Private-Subnet-1a	subnet-0882588679e2dbac6	Available	vpc-0fbacfba9e3734834 Basti...	10.0.0.128/28			
<input type="checkbox"/>	Public-Subnet-1a	subnet-0a51625298642f3a7	Available	vpc-0fbacfba9e3734834 Basti...	10.0.0.0/28			
<input type="checkbox"/>	Private-Subnet-1b	subnet-01d69d0a0a22074e9	Available	vpc-0fbacfba9e3734834 Basti...	10.0.0.144/28			

Creating 4 subnets:

this hyperlink.'"/>

Visual Subnet Calculator

Enter the network you wish to subnet:

Network Address	Mask bits
10.0.0.0	/24
<input type="button" value="Update"/> <input type="button" value="Reset"/>	

Show columns: Subnet address Netmask Range of addresses Useable IPs Hosts Divide Join

Click below to split and join subnets.

If you wish to save this subnetting for later, bookmark [this hyperlink](#).

Subnet address	Range of addresses	Useable IPs	Hosts	Divide	Join
10.0.0.0/26	10.0.0.0 - 10.0.0.63	10.0.0.1 - 10.0.0.62	62	Divide	/26 /26 /25 /24
10.0.0.64/26	10.0.0.64 - 10.0.0.127	10.0.0.65 - 10.0.0.126	62	Divide	
10.0.0.128/26	10.0.0.128 - 10.0.0.191	10.0.0.129 - 10.0.0.190	62	Divide	
10.0.0.192/26	10.0.0.192 - 10.0.0.255	10.0.0.193 - 10.0.0.254	62	Divide	

- 1) Public-Subnet-1b

subnet-Oaa0188a451210698 / Public-Subnet-1b

Actions ▾

Details

Subnet ID	Subnet ARN	State	IPv4 CIDR
<input checked="" type="checkbox"/> subnet-Oaa0188a451210698	<input checked="" type="checkbox"/> arn:aws:ec2:us-east-1:646975365807:subnet/subnet-Oaa0188a451210698	<input checked="" type="checkbox"/> Available	<input checked="" type="checkbox"/> 10.0.0.16/28
Available IPv4 addresses	IPv6 CIDR	Availability Zone	Availability Zone ID
<input checked="" type="checkbox"/> 11	-	<input checked="" type="checkbox"/> us-east-1b	<input checked="" type="checkbox"/> use1-az1
Network border group	VPC	Route table	Network ACL
<input checked="" type="checkbox"/> us-east-1	vpc-0fbacfba9e3734834 Bastion-RDS-vpc	<input checked="" type="checkbox"/> rtb-041268ec5156c6db5 Bastion-RDS-rtb-public	<input checked="" type="checkbox"/> acl-0178e4823e8f8b568
Default subnet	Auto-assign IPv6 address	Auto-assign IPv6 address	Auto-assign customer-owned IPv4 address
No	No	No	No
Customer-owned IPv4 pool	Auto-assign public IPv4 address	IPv4 CIDR reservations	IPv6 CIDR reservations
-	Yes	-	-
IPv6-only	Outpost ID	Resource name DNS A record	Resource name DNS AAAA record
No	-	Disabled	Disabled
DNS64	Hostname type		
Disabled	IP name		
	Owner		
	<input checked="" type="checkbox"/> 646975365807		

Flow logs

Route table

Network ACL

CIDR reservations

Sharing

Tags

Route table: rtb-041268ec5156c6db5 / Bastion-RDS-rtb-public

Edit route table association

Routes (2)

<input checked="" type="checkbox"/> Filter routes		<	1	>	<input checked="" type="checkbox"/>
Destination	▼	▼	Target		
10.0.0.0/24			local		
0.0.0.0/0			igw-Offa70f45448956f5		

Flow logs

Route table

Network ACL

CIDR reservations

Sharing

Tags

Network ACL: acl-0178e4823e8f8b568

Edit network ACL association

Inbound rules (2)

<input checked="" type="checkbox"/> Filter inbound rules		<	1	>	<input checked="" type="checkbox"/>
Rule number	▼	Type	▼	Protocol	▼
100	All traffic	All	All	0.0.0.0/0	<input checked="" type="checkbox"/> Allow
*	All traffic	All	All	0.0.0.0/0	<input checked="" type="checkbox"/> Deny

Outbound rules (2)

<input checked="" type="checkbox"/> Filter outbound rules		<	1	>	<input checked="" type="checkbox"/>
Rule number	▼	Type	▼	Protocol	▼
100	All traffic	All	All	0.0.0.0/0	<input checked="" type="checkbox"/> Allow
*	All traffic	All	All	0.0.0.0/0	<input checked="" type="checkbox"/> Deny

2) Private-Subnet-1a

subnet-0882588679e2dbacb / Private-Subnet-1a

Details

Subnet ID	Subnet ARN	State	IPv4 CIDR
subnet-0882588679e2dbacb	arn:aws:ec2:us-east-1:646975365807:subnet/subnet-0882588679e2dbacb	Available	10.0.0.128/28
Available IPv4 addresses		Availability Zone	Availability Zone ID
9		us-east-1a	use1-az6
Network border group	IPv6 CIDR	Route table	Network ACL
us-east-1	-	rtb-01f4efdf830e62d0f Bastion-RDS-rtb-private	acl-0178e4823e8f8b568
Default subnet	VPC	Auto-assign IPv6 address	Auto-assign customer-owned IPv4 address
No	vpc-0fbacfba9e3734834 Bastion-RDS-vpc	No	No
Customer-owned IPv4 pool	Auto-assign public IPv4 address	IPv4 CIDR reservations	IPv6 CIDR reservations
-	No	-	-
IPv6-only	Outpost ID	Resource name DNS A record	Resource name DNS AAAA record
No	-	Disabled	Disabled
DNS64	Hostname type		
Disabled	IP name		
	Owner		
	646975365807		

Flow logs

Route table

Network ACL

CIDR reservations

Sharing

Tags

Route table: [rtb-01f4efdf830e62d0f / Bastion-RDS-rtb-private](#)

Edit route table association

Routes (2)

Filter routes

< 1 > ⚙

Destination	▼	Target	▼
10.0.0.0/24		local	
pl-63a5400a		vpce-08edd7c1bd9c75825	

Flow logs

Route table

Network ACL

CIDR reservations

Sharing

Tags

Network ACL: [acl-0178e4823e8f8b568](#)

Edit network ACL association

Inbound rules (2)

Filter inbound rules

< 1 > ⚙

Rule number	▼	Type	▼	Protocol	▼	Port range	▼	Source	▼	Allow/Deny	▼
100		All traffic		All		All		0.0.0.0/0		Allow	
*		All traffic		All		All		0.0.0.0/0		Deny	

Outbound rules (2)

Filter outbound rules

< 1 > ⚙

Rule number	▼	Type	▼	Protocol	▼	Port range	▼	Destination	▼	Allow/Deny	▼
100		All traffic		All		All		0.0.0.0/0		Allow	
*		All traffic		All		All		0.0.0.0/0		Deny	

3) Public-Subnet-1a

subnet-0a51625298642f3a7 / Public-Subnet-1a

Actions ▾

Details

Subnet ID subnet-0a51625298642f3a7	Subnet ARN arn:aws:ec2:us-east-1:646975365807:subnet/subnet-0a51625298642f3a7	State Available	IPv4 CIDR 10.0.0.0/28
Available IPv4 addresses 10		Availability Zone us-east-1a	Availability Zone ID use1-a26
Network border group us-east-1	IPv6 CIDR -	Route table rtb-041268ec5156c6db5 Bastion-RDS-rtb-public	Network ACL acl-0178e4823e8f8b568
Default subnet No	VPC vpc-0fbacfb9e3734834 Bastion-RDS-vpc	Auto-assign IPv6 address No	Auto-assign customer-owned IPv4 address No
Customer-owned IPv4 pool -	Auto-assign public IPv4 address Yes	IPv4 CIDR reservations -	IPv6 CIDR reservations -
IPv6-only No	Outpost ID -	Resource name DNS A record Disabled	Resource name DNS AAAA record Disabled
DNS64 Disabled	Hostname type IP name	Owner 646975365807	

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Route table: rtb-041268ec5156c6db5 / Bastion-RDS-rtb-public

Edit route table association

Routes (2)

Destination		Target
10.0.0.0/24		local
0.0.0.0/0		igw-Offa70f45448956f5

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Network ACL: acl-0178e4823e8f8b568

Edit network ACL association

Inbound rules (2)

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

Outbound rules (2)

Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

4) Private-Subnet-1b

subnet-01d69d0a0a22074e9 / Private-Subnet-1b

Actions ▾

Details

Subnet ID	Subnet ARN	State	IPv4 CIDR
subnet-01d69d0a0a22074e9	arn:aws:ec2:us-east-1:646975365807:subnet/subnet-01d69d0a0a22074e9	Available	10.0.0.144/28
Available IPv4 addresses	11	Availability Zone	Availability Zone ID
Network border group	us-east-1	us-east-1b	use1-az1
Default subnet	VPC	Route table	Network ACL
No	vpc-0fbacfb9e3734834 Bastion-RDS-vpc	rtb-01f4efdf830e62d0f Bastion-RDS-rtb-private	acl-0178e4823e8f8b568
Customer-owned IPv4 pool	Auto-assign public IPv4 address	Auto-assign IPv6 address	Auto-assign customer-owned IPv4 address
-	No	No	No
IPv6-only	Outpost ID	IPv4 CIDR reservations	IPv6 CIDR reservations
No	-	-	-
DNS64	Hostname type	Resource name DNS A record	Resource name DNS AAAA record
Disabled	IP name	Disabled	Disabled
	Owner		
	646975365807		

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Route table: rtb-01f4efdf830e62d0f / Bastion-RDS-rtb-private

Edit route table association

Routes (2)

Filter routes		<	1	>	↻
Destination	▼	Target			
10.0.0.0/24		local			
pl-63a5400a		vpce-08edd7c1bd9c75825			

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Network ACL: acl-0178e4823e8f8b568

Edit network ACL association

Inbound rules (2)

Filter inbound rules		<	1	>	↻
Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

Outbound rules (2)

Filter outbound rules		<	1	>	↻
Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

Route Tables

The screenshot shows the AWS Route Tables list page. At the top, there are buttons for 'Route tables (3)', 'Info', 'Actions', and 'Create route table'. Below is a search bar and a 'Clear filters' button. The main table has columns: Name, Route table ID, Explicit subnet associations, Edge as..., Main, and VPC. The data rows are:

	Name	Route table ID	Explicit subnet associations	Edge as...	Main	VPC
<input type="checkbox"/>	Bastion-RDS-rtb-private	rtb-01f4efdf830e62d0f	2 subnets	-	No	vpc-0fbacfba9e3734834 Basti...
<input type="checkbox"/>	-	rtb-01f95ed69c6bc087d	-	-	Yes	vpc-0fbacfba9e3734834 Basti...
<input type="checkbox"/>	Bastion-RDS-rtb-public	rtb-041268ec5156c6db5	2 subnets	-	No	vpc-0fbacfba9e3734834 Basti...

Both Private subnets are part of private route table that have only local route that enable internal communication.

Both Public subnets have a route via internet gateway which means these 2 subnets can communicate with resources via internet or it can access internet.

If you want to get connected to Private route/subnet resources, then we need to depend on jump server or bastion host.

Whatever the resources we are going to launch in public subnet needs a public IP address, so we can enable that setting as follows:

The screenshot shows the AWS Subnets list page for a VPC. At the top, there are buttons for 'Subnets (1/7)', 'Info', 'Actions', and 'Create subnet'. Below is a search bar and a 'Filter subnets' button. The main table has columns: Name, Subnet ID, State, VPC, IP, and Actions. The data row is:

	Name	Subnet ID	State	VPC	IP	Actions
<input checked="" type="checkbox"/>	Public-Subnet-1a	subnet-00311432c7b8ea410	Available	vpc-088042168002d570b Cu...	19	Edit subnet settings Edit IPv6 CIDRs Edit network ACL association Edit route table association Edit CIDR reservations Share subnet Manage tags

Below the table, there is a section titled 'Auto-assign IP settings' with an 'Info' link. It says: 'Enable the auto-assign IP settings to automatically request a public IPv4 or IPv6 address for a new network interface in this subnet.' There are two checkboxes: one checked for 'Enable auto-assign public IPv4 address' and one disabled for 'Enable auto-assign customer-owned IPv4 address'.

Internet Gateway

Internet gateways (1) Info					
Actions Create internet gateway					
<input type="text"/> Search Clear filters					
	Name	Internet gateway ID	State	VPC ID	Owner
<input type="checkbox"/>	Bastion-RDS-igw	igw-0ffa70f45448956f5	Attached	vpc-0fbacfba9e3734834 Bastion-RDS-...	646975365807

Endpoints

Endpoints (1) Info					
Actions Create endpoint					
<input type="text"/> Search Clear filters					
	Name	VPC endpoint ID	VPC ID	Service name	
<input type="checkbox"/>	Bastion-RDS-vpce-s3	vpce-08edd7c1bd9c75825	vpc-0fbacfba9e3734834 Bastion-RDS-...	com.amazonaws.us-east-1.s3	

Finally, to test this VPC Architecture we will launch instances:

Services [See all 8 results](#)

 EC2 ★	Virtual Servers in the Cloud
Top features	
Dashboard Launch templates Instances Spot Instance requests Savings plans	

Creating Bastion Host instance

Instance summary for i-062ffef836c6a2b5c (Bastion Host) Info		
Connect Actions ▾ Instance state ▾		
Updated less than a minute ago		
Instance ID i-062ffef836c6a2b5c (Bastion Host)	Public IPv4 address -	Private IPv4 addresses 10.0.0.7
IPv6 address -	Instance state Stopped	Public IPv4 DNS -
Hostname type IP name: ip-10-0-0-7.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-0-7.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address -	VPC ID vpc-0fbacfb9e3734834 (Bastion-RDS-vpc)	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0a51625298642f3a7 (Public-Subnet-1a)	
IMDSv2 Required		
Details Status and alarms New Monitoring Security Networking Storage Tags		
Instance details Info		
Platform Amazon Linux (Inferred)	AMI ID ami-0759f51a90924c166	Monitoring disabled
Platform details Linux/UNIX	AMI name al2023-ami-2023.3.20231211.4-kernel-6.1-x86_64	Termination protection Disabled
Stop protection Disabled	Launch time Tue Dec 19 2023 08:51:57 GMT+1100 (Australian Eastern Daylight Time) (2 days)	AMI location amazon/al2023-ami-2023.3.20231211.4-kernel-6.1-x86_64
Instance auto-recovery Default	Lifecycle normal	Stop-hibernate behavior Disabled
AMI Launch index 0	Key pair assigned at launch bastion	State transition reason User initiated (2023-12-19 04:51:45 GMT)
Credit specification standard	Kernel ID -	State transition message Client.UserInitiatedShutdown: User initiated shutdown
Usage operation RunInstances	RAM disk ID -	Owner 646975365807
Enclaves Support -	Boot mode uefi-preferred	Current Instance boot mode legacy-bios
Allow tags in instance metadata Disabled	Use RBN as guest OS hostname Disabled	Answer RBN DNS hostname IPv4 Disabled

Security

Security details		Networking		Storage		Tags																																	
IAM Role	-	Owner ID	646975365807	Launch time	Tue Dec 19 2023 08:51:57 GMT+1100 (Australian Eastern Daylight Time)																																		
Security groups		<ul style="list-style-type: none"> sg-0da9e27156e0e08bd (Bastion-security-group) sg-06fcf86a9f15f6bac (ec2-rds-1) 																																					
Inbound rules																																							
<table border="1"> <thead> <tr> <th colspan="5">Filter rules</th> <th><</th> <th>1</th> <th>></th> </tr> <tr> <th>Name</th> <th>Security group rule ID</th> <th>Port range</th> <th>Protocol</th> <th>Source</th> <th colspan="3"></th> </tr> </thead> <tbody> <tr> <td>-</td> <td>sgr-0d104a3bc380ca552</td> <td>22</td> <td>TCP</td> <td>120.17.113.100/32</td> <td colspan="3"></td> </tr> </tbody> </table>								Filter rules					<	1	>	Name	Security group rule ID	Port range	Protocol	Source				-	sgr-0d104a3bc380ca552	22	TCP	120.17.113.100/32											
Filter rules					<	1	>																																
Name	Security group rule ID	Port range	Protocol	Source																																			
-	sgr-0d104a3bc380ca552	22	TCP	120.17.113.100/32																																			
Outbound rules																																							
<table border="1"> <thead> <tr> <th colspan="5">Filter rules</th> <th><</th> <th>1</th> <th>></th> </tr> <tr> <th>Name</th> <th>Security group rule ID</th> <th>Port range</th> <th>Protocol</th> <th>Destination</th> <th colspan="3"></th> </tr> </thead> <tbody> <tr> <td>-</td> <td>sgr-0e6d9a4ce35deddf8</td> <td>All</td> <td>All</td> <td>0.0.0.0/0</td> <td colspan="3"></td> </tr> <tr> <td>-</td> <td>sgr-02b39e4ae320ae6f2</td> <td>3306</td> <td>TCP</td> <td>sg-0e9c8132794066e4c</td> <td colspan="3"></td> </tr> </tbody> </table>								Filter rules					<	1	>	Name	Security group rule ID	Port range	Protocol	Destination				-	sgr-0e6d9a4ce35deddf8	All	All	0.0.0.0/0				-	sgr-02b39e4ae320ae6f2	3306	TCP	sg-0e9c8132794066e4c			
Filter rules					<	1	>																																
Name	Security group rule ID	Port range	Protocol	Destination																																			
-	sgr-0e6d9a4ce35deddf8	All	All	0.0.0.0/0																																			
-	sgr-02b39e4ae320ae6f2	3306	TCP	sg-0e9c8132794066e4c																																			
Networking details		Storage		Tags																																			
Public IPv4 address	Private IPv4 addresses	VPC ID																																					
-	10.0.0.7	vpc-0fbacfba9e3734834 (Bastion-RDS-vpc)																																					
Public IPv4 DNS	Private IP DNS name (IPv4 only)																																						
-	ip-10-0-0-7.ec2.internal																																						
Subnet ID	IPV6 addresses	Secondary private IPv4 addresses																																					
subnet-0a51625298642f3a7 (Public-Subnet-1a)	-																																						
Availability zone	Carrier IP addresses (ephemeral)	Outpost ID																																					
us-east-1a	-	-																																					
Use RBN as guest OS hostname	Answer RBN DNS hostname IPv4																																						
<input checked="" type="checkbox"/> Disabled	<input checked="" type="checkbox"/> Disabled																																						
Network Interfaces (1)																																							
<table border="1"> <thead> <tr> <th colspan="6">Filter network interfaces</th> </tr> <tr> <th>Interface ID</th> <th>Description</th> <th>IPv4 Prefixes</th> <th>IPv6 Prefixes</th> <th>Public IPv4 address</th> <th>Private IPv4 add</th> </tr> </thead> <tbody> <tr> <td>eni-03ae415ffec7a7b6c</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>10.0.0.7</td> </tr> </tbody> </table>						Filter network interfaces						Interface ID	Description	IPv4 Prefixes	IPv6 Prefixes	Public IPv4 address	Private IPv4 add	eni-03ae415ffec7a7b6c	-	-	-	-	10.0.0.7																
Filter network interfaces																																							
Interface ID	Description	IPv4 Prefixes	IPv6 Prefixes	Public IPv4 address	Private IPv4 add																																		
eni-03ae415ffec7a7b6c	-	-	-	-	10.0.0.7																																		

Security Group for Bastion Host instance

EC2 > Security Groups > sg-0da9e27156e0e08bd - Bastion-security-group			
sg-0da9e27156e0e08bd - Bastion-security-group			Actions ▾
Details			
Security group name <input type="checkbox"/> Bastion-security-group	Security group ID <input type="checkbox"/> sg-0da9e27156e0e08bd	Description <input type="checkbox"/> SSH for Bastion	VPC ID <input type="checkbox"/> vpc-0fbacfb9e3734834 ↗
Owner <input type="checkbox"/> 646975365807	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	
Inbound rules Outbound rules Tags			
Inbound rules (1)			
<input type="button" value="C"/> Manage tags Edit inbound rules			
<input type="checkbox"/> Name ▾ Security group rule ID ▾ IP versi... ▾ Type ▾ Protocol ▾ Port ra... ▾ Source ▾			
<input type="checkbox"/> - sgr-0d104a3bc380ca552 IPv4 SSH TCP 22 120.17.113.100/32			
Inbound rules Outbound rules Tags			
Outbound rules (1)			
<input type="button" value="C"/> Manage tags Edit outbound rules			
<input type="checkbox"/> Name ▾ Security group rule ID ▾ IP versi... ▾ Type ▾ Protocol ▾ Port ra... ▾ Destination ▾			
<input type="checkbox"/> - sgr-0e6d9a4ce35deddf8 IPv4 All traffic All All 0.0.0.0/0			

Key Pair for Bastion Host instance

Key pairs (1/6) Info					
<input type="button" value="C"/> Actions Create key pair					
Name	Type	Created	Fingerprint	ID	
<input type="checkbox"/> ec2	rsa	2021/09/21 10:45 GMT+10	9f:3cae:2fb5:8d:18:75:af:79:4f...	key-048d0b45b33629734	↗
<input type="checkbox"/> MyNVKP	rsa	2021/12/15 13:03 GMT+11	92:f5:87:01:08:4f:3a:b9:d2:75:b...	key-0e5738d2cd6355292	↗
<input type="checkbox"/> newKeyPair	rsa	2021/12/15 15:19 GMT+11	f7:32:da:43:32:43:69:f9:88:c5:7...	key-084c1f9b537a5a9b5	↗
<input type="checkbox"/> adam-key-pair	rsa	2023/06/01 16:25 GMT+10	f3:0c:30:04:df:e2:85:39:9e:e5:d6...	key-061b81a14b1284499	↗
<input checked="" type="checkbox"/> bastion	rsa	2023/12/13 01:11 GMT+11	ad:71:30:9e:3d:a9:f0:88:35:e4:b...	key-0958b8399c85edc09	↗

Creating Private Linux instance

Instance summary for i-08511c2e2521064d1 (Private-EC2) Info		
Connect Actions ▾ Instance state ▾		
Updated less than a minute ago		
Instance ID i-08511c2e2521064d1 (Private-EC2)	Public IPv4 address -	Private IPv4 addresses 10.0.0.139
IPv6 address -	Instance state Stopped	Public IPv4 DNS -
Hostname type IP name: ip-10-0-0-139.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-0-139.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address -	VPC ID vpc-0fbacfba9e3734834 (Bastion-RDS-vpc)	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0882588679e2dbacb (Private-Subnet-1a)	
IMDSv2 Required		
Details Status and alarms New Monitoring Security Networking Storage Tags		
▼ Instance details Info		
Platform Amazon Linux (Inferred)	AMI ID ami-0759f51a90924c166	Monitoring disabled
Platform details Linux/UNIX	AMI name al2023-ami-2023.3.20231211.4-kernel-6.1-x86_64	Termination protection Disabled
Stop protection Disabled	Launch time Tue Dec 19 2023 12:00:21 GMT+1100 (Australian Eastern Daylight Time) (2 days)	AMI location amazon/al2023-ami-2023.3.20231211.4-kernel-6.1-x86_64
Instance auto-recovery Default	Lifecycle normal	Stop-hibernate behavior Disabled
AMI Launch index 0	Key pair assigned at launch sshuser	State transition reason User initiated (2023-12-19 04:51:45 GMT)
Credit specification standard	Kernel ID -	State transition message Client.UserInitiatedShutdown: User initiated shutdown
Usage operation RunInstances	RAM disk ID -	Owner 646975365807
Enclaves Support -	Boot mode uefi-preferred	Current instance boot mode legacy-bios
Allow tags in instance metadata Disabled	Use RBN as guest OS hostname Disabled	Answer RBN DNS hostname IPv4 Disabled

Details	Status and alarms New	Monitoring	Security	Networking	Storage	Tags																				
▼ Networking details Info																										
Public IPv4 address	Private IPv4 addresses	VPC ID																								
-	10.0.0.139	vpc-0fbacfba9e3734834 (Bastion-RDS-vpc)																								
Public IPv4 DNS	Private IP DNS name (IPv4 only)																									
-	ip-10-0-0-139.ec2.internal																									
Subnet ID	IPv6 addresses	Secondary private IPv4 addresses																								
subnet-0882588679e2dbacb (Private-Subnet-1a)	-	-																								
Availability zone	Carrier IP addresses (ephemeral)	Outpost ID																								
us-east-1a	-	-																								
Use RBN as guest OS hostname	Answer RBN DNS hostname IPv4																									
Disabled	Disabled																									
▼ Network Interfaces (1) Info																										
<table border="1"> <thead> <tr> <th colspan="7">Filter network interfaces</th> </tr> <tr> <th>Interface ID</th> <th>Description</th> <th>IPv4 Prefixes</th> <th>IPv6 Prefixes</th> <th>Public IPv4 address</th> <th>Private IPv4 add</th> <th></th> </tr> </thead> <tbody> <tr> <td>eni-Of41e55a33d6159de</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>10.0.0.139</td> <td></td> </tr> </tbody> </table>						Filter network interfaces							Interface ID	Description	IPv4 Prefixes	IPv6 Prefixes	Public IPv4 address	Private IPv4 add		eni-Of41e55a33d6159de	-	-	-	-	10.0.0.139	
Filter network interfaces																										
Interface ID	Description	IPv4 Prefixes	IPv6 Prefixes	Public IPv4 address	Private IPv4 add																					
eni-Of41e55a33d6159de	-	-	-	-	10.0.0.139																					

Security Group for Bastion Host instance

[EC2](#) > [Security Groups](#) > sg-07ee81e3b3e7c550b - Security-Group-Private

sg-07ee81e3b3e7c550b - Security-Group-Private

[Actions ▾](#)

Details

Security group name	Security-Group-Private	Security group ID	sg-07ee81e3b3e7c550b	Description		VPC ID
Owner	646975365807	Inbound rules count	1 Permission entry	launch-wizard-2 created 2023-12-18T12:06:25.080Z		vpc-0fbacfba9e3734834

[Inbound rules](#)

[Outbound rules](#)

[Tags](#)

Inbound rules (1)

[C](#)

[Manage tags](#)

[Edit inbound rules](#)

[Search](#)

<input type="checkbox"/>	Name	Security group rule ID	IP versi...	Type	Protocol	Port ra...	Source
<input type="checkbox"/>	-	sgr-0ab387e1572838011	IPv4	SSH	TCP	22	0.0.0.0/0

[Inbound rules](#)

[Outbound rules](#)

[Tags](#)

Outbound rules (1)

[C](#)

[Manage tags](#)

[Edit outbound rules](#)

<input type="checkbox"/>	Name	Security group rule ID	IP versi...	Type	Protocol	Port ra...	Destination
<input type="checkbox"/>	-	sgr-0179a5de9b6d0a5f4	IPv4	All traffic	All	All	0.0.0.0/0

Key Pair for Bastion Host instance

Key pairs (1/6) Info					
	Name	Type	Created	Fingerprint	ID
<input type="checkbox"/>	ec2	rsa	2021/09/21 10:45 GMT+10	9f:3cae:2fb5:8d:18:75:af:79:4f:6...	key-048d0b45b33629734
<input type="checkbox"/>	MyNVKP	rsa	2021/12/15 13:03 GMT+11	92:f5:87:01:08:4f:3a:b9:d2:75:b5:...	key-0e5738d2cd6355292
<input type="checkbox"/>	newKeyPair	rsa	2021/12/15 15:19 GMT+11	f7:32:da:43:32:43:69:f9:88:c5:7e:...	key-084c1f9b537a5a9b5
<input type="checkbox"/>	adam-key-pair	rsa	2023/06/01 16:25 GMT+10	f3:0c:30:04:df:e2:85:39:9e:e5:d6:...	key-061b81a14b1284499
<input type="checkbox"/>	bastion	rsa	2023/12/13 01:11 GMT+11	ad:71:30:9e:3d:a9:f0:88:35:e4:b6:...	key-0958b8399c85edc09
<input checked="" type="checkbox"/>	sshuser	rsa	2023/12/13 01:12 GMT+11	48:0:c:dc:7d:10:37:de:2e:31:83:2f:...	key-0f3b1cc58f1951cdf

Connection to Bastion Host instance

```
● ○ ● ○ Downloads — ec2-user@ip-10-0-0-125:~ — ssh -A ec2-user@18.205.59.101 -i sshuser.pem
[(base) MacBook-Air:Downloads rohit_manral$ ssh -A ec2-user@18.205.59.101 -i sshuser.pem]
NOTE: This SSH session will be recorded
AUDIT KEY: 2023-12-13_02-27-02_ec2-user

[[ec2-user@ip-10-0-0-125 ~]$ pwd
/home/ec2-user
[ec2-user@ip-10-0-0-125 ~]$ ]
```

Connection to Private Linux instance

```
● ○ ● ○ Downloads — ec2-user@ip-10-0-0-223:~ — ssh -A ec2-user@18.205.59.101 -i sshuser.pem — 109x25
[(base) MacBook-Air:Downloads rohit_manral$ ssh -A ec2-user@18.205.59.101 -i sshuser.pem]
NOTE: This SSH session will be recorded
AUDIT KEY: 2023-12-13_02-53-23_ec2-user

[[ec2-user@ip-10-0-0-125 ~]$ ssh -i "bastion.pem" ec2-user@10.0.0.223
Last login: Wed Dec 13 02:51:00 2023 from 10.0.0.125

      _\   _ ) 
     _ \ ( _ /   Amazon Linux AMI
     ___| \___|_____|

https://aws.amazon.com/amazon-linux-ami/2016.03-release-notes/
[[ec2-user@ip-10-0-0-223 ~]$ pwd
/home/ec2-user
[[ec2-user@ip-10-0-0-223 ~]$ ping www.google.com
PING www.google.com (172.253.122.147) 56(84) bytes of data.

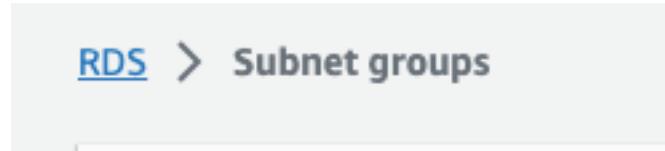
^C
--- www.google.com ping statistics ---
14 packets transmitted, 0 received, 100% packet loss, time 13747ms

[ec2-user@ip-10-0-0-223 ~]$ ]
```

How to Launch MySQL RDS DB instance in our Custom VPC's Private subnet

Here, we will use the two private subnets created above & create a subnet group, within that subnet group we will launch the MySQL RDS DB instance.

Go to **RDS --> Subnet Groups**



The screenshot shows the 'Create DB subnet group' wizard. At the top, there is a breadcrumb trail: 'RDS > Subnet groups > Create DB subnet group'. Below it, the title 'Create DB subnet group' is displayed. A descriptive text explains that users need to give the subnet group a name, add a description, and choose an existing VPC. The main form is titled 'Subnet group details'. It contains three sections: 'Name' (with a note about not being able to modify the name after creation), 'Description' (with a note about character restrictions), and 'VPC' (with a note about not being able to change the VPC identifier after creation). A dropdown menu labeled 'Choose a VPC' is shown.

RDS > Subnet groups > Create DB subnet group

Create DB subnet group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.

Subnet group details

Name
You won't be able to modify the name after your subnet group has been created.

Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

Description

VPC
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.

RDS > Subnet groups > privatesubnetsg

privatesubnetsg

Subnet group details		
VPC ID	vpc-0fbacfba9e3734834	
ARN	arn:aws:rds:us-east-1:646975365807:subgrp:privatesubnetsg	
Supported network types	IPv4	
Description	Bastion VPC private subnet Group	
Subnets (2)		
Availability zone	Subnet ID	CIDR block
us-east-1a	subnet-0882588679e2dbac 	10.0.0.128/28
us-east-1b	subnet-01d69d0a0a22074e9 	10.0.0.144/28

Above, we selected both the private subnets.

Now, install one MySQL DB instance

Create database

Choose a database creation method [Info](#)

Standard create

You set all of the configuration options, including ones for availability, security, backups, and maintenance.

Easy create

Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type [Info](#)

Amazon Aurora



MySQL



MariaDB



Version

MySQL 8.0.28

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](#)

Settings

Settings

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.

mysqldb

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.

admin

1 to 16 alphanumeric characters. First character must be a letter.

Auto generate a password

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

Master password [Info](#)

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote), "(double quote) and @ (at sign).

Instance configuration

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

DB instance class [Info](#)

- Standard classes (includes m classes)
- Memory optimized classes (includes r and x classes)
- Burstable classes (includes t classes)**

db.t4g.micro

2 vCPUs 1 GiB RAM Network: 2,085 Mbps

Include previous generation classes

Storage

Storage type [Info](#)

General Purpose SSD (gp2)

Baseline performance determined by volume size

Allocated storage

20

GiB

(Minimum: 20 GiB. Maximum: 6,144 GiB) Higher allocated storage can improve IOPS performance.

We need to create a new Security Group for RDS DB instance "MysqlSG":

Choose existing
Choose existing VPC security groups

Create new
Create new VPC security group

New VPC security group name
MysqlSG

Availability Zone [Info](#)
ap-south-1a

▼ Additional configuration

Database port [Info](#)
TCP/IP port that the database will use for application connections.
3306

Password for your database mysqlDb

This is the only time you will be able to view this password. Copy and save the password for your reference, otherwise you will need to modify the database to change it.

Master username
admin

Master password
Mysql1234 [Copy](#)

[Close](#)

Followed by the resultant RDS instance: -

Databases (1)							<input checked="" type="radio"/> Group resources		Modify	Actions ▾	Restore from S3	Create database
							<input type="text"/>	Filter by databases	< 1 >			
	DB identifier	Status	Role	Engine	Region & AZ	Size	Recommendations					
<input type="radio"/>	mysqlDb		Available	Instance	MySQL Community	us-east-1a	db.t3.micro		3 Informational			

RDS > Databases > mysqldb

mysqldb

Modify
Actions ▾

Summary

DB identifier mysqldb	Status Available	Role Instance	Engine MySQL Community	Recommendations 3 Informational
CPU <div style="width: 2.65%; height: 10px; background-color: #ff9999;"></div>	Class db.t3.micro	Current activity <div style="width: 0%; height: 10px; background-color: #cccccc;"></div>	Region & AZ us-east-1a	

< Connectivity & security Monitoring Logs & events Configuration Zero-ETL integrations Maintenance & backups >

Connectivity & security

Endpoint & port	Networking	Security
Endpoint mysqldb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com	Availability Zone us-east-1a	VPC security groups MysqlSG (sg-00dadcef68dbbb8ce) Active
Port 3306	VPC Bastion-RDS-vpc (vpc-Ofbacfba9e3734834)	rds-ec2-1 (sg-0e9c8132794066e4c) Active
	Subnet group privatesubnetsg	Publicly accessible No
	Subnets subnet-0882588679e2dbacb subnet-01d69d0a0a22074e9	Certificate authority Info rds-ca-2019
	Network type IPv4	Certificate authority date August 23, 2024, 03:08 (UTC+10:00)
		DB instance certificate expiration date

Connected compute resources (1) [Info](#)

Connections to compute resources that were created automatically by RDS are shown here. Connections to compute resources that were created manually aren't shown.

Resource identifier	Resource type	Availability Zone	VPC security group	Compute resource security group	
i-062ffef836c6a2b5c	EC2 instance	us-east-1a	rds-ec2-1	ec2-rds-1	-

Security group rules (4)

Filter by Security group rules			< 1 >	↻
Security group	Type	Rule		
MySQL SG (sg-00dadcef68dbbb8ce)	CIDR/IP - Inbound	218.215.29.247/32		
MySQL SG (sg-00dadcef68dbbb8ce)	EC2 Security Group - Inbound	sg-0da9e27156e0e08bd		
MySQL SG (sg-00dadcef68dbbb8ce)	CIDR/IP - Outbound	0.0.0.0/0		
rds-ec2-1 (sg-0e9c8132794066e4c)	EC2 Security Group - Inbound	sg-06fcf86a9f15f6bac		

Replication (1)

Filter by Replication			< 1 >	↻	
DB identifier	Role	Region & AZ	Replication source	Replication state	Lag
mysqldb	Instance	us-east-1a	-	-	-

< Connectivity & security | Monitoring | Logs & events | **Configuration** | Zero-ETL integrations | Maintenance & backups >

Instance

Configuration	Instance class	Storage	Performance Insights
DB instance ID mysqldb	Instance class db.t3.micro	Encryption Enabled	Performance Insights enabled Turned off
Engine version 8.0.33	VCPU 2	AWS KMS key aws/rds	
DB name -	RAM 1 GB	Storage type General Purpose SSD (gp2)	
License model General Public License	Availability	Storage 20 GiB	
Option groups default:mysql-8-0 In sync	Master username admin	Provisioned IOPS -	
Amazon Resource Name (ARN) arn:aws:rds:us-east-1:646975365807:db:mysqldb	Master password *****	Storage throughput -	
Resource ID db-HFULFZB4XFUL7NJISGJQPQMD7M	IAM DB authentication Not enabled	Storage autoscaling Enabled	
Created time December 19, 2023, 00:04 (UTC+11:00)	Multi-AZ No	Maximum storage threshold 1000 GiB	
DB instance parameter group default.mysql8.0 In sync	Secondary Zone -	Storage file system configuration Current	
Deletion protection Disabled			
Architecture settings Non-multitenant architecture			

So, we cannot get connected to this DB from our local network, however we have to use the SSH connection to connect to this RDS database via our Bastion EC2 instance that we created before.

This Bastion EC2 instance is to use as an intermediate SSH connectivity. Check below the inbound security group rules for Bastion-RDS instance.

Inbound security groups rules

▼ Security group rule 1 (TCP, 22, 124.123.170.214/32) Remove

Type Info ssh	Protocol Info TCP	Port range Info 22
Source type Info My IP	Source Info <input type="text"/> Add CIDR, prefix list or security group 124.123.170.214/32 X	Description - optional Info e.g. SSH for admin desktop

Below is the RDS database instance's security group inbound rules:

[EC2](#) > [Security Groups](#) > sg-00dadcef68dbbb8ce

sg-00dadcef68dbbb8ce - MySqlSG Actions ▾

Details			
Security group name MySQLG	Security group ID sg-00dadcef68dbbb8ce	Description Created by RDS management console	VPC ID vpc-0fbacfba9e3734834
Owner 646975365807	Inbound rules count 2 Permission entries	Outbound rules count 1 Permission entry	

[Inbound rules](#) [Outbound rules](#) [Tags](#)

Inbound rules (2) [C](#) [Manage tags](#) [Edit inbound rules](#)

<input type="checkbox"/>	Name ▾	Security group rule ID ▾	IP versi... ▾	Type ▾	Protocol ▾	Port ra... ▾	Source ▾
<input type="checkbox"/>	-	sgr-0a2dfce26e436f21e	IPv4	MYSQL/Aurora	TCP	3306	218.215.29.247/32
<input type="checkbox"/>	-	sgr-0bdbb357ad6306fcc	-	MYSQL/Aurora	TCP	3306	sg-0da9e27156e0e08...

Finally, the DB instance creation is completed, besides for the RDS we are going to get an endpoint not IP address to get connected with the RDS DB instance directly from the local network.

mysqlDb

Summary

DB identifier	Status	Role
mysqlDb	Available	Instance
CPU	Class	Current
 2.74%	db.t3.micro	

<

Connectivity & security

Monitoring

Logs & events

Connectivity & security

Endpoint & port

Endpoint
mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com

Port

Networking

Availability Zone
us-east-1a

VPC

How to connect to the Custom VPC's Private subnet database from our local system with SSH connection via MySQL Workbench/ DBeaver

a. SSH connection via MySQL Workbench

The screenshot shows the MySQL Workbench interface. At the top, there is a navigation bar with links to 'Browse Documentation >', 'Read the Blog >', and 'Discuss on the Forums >'. Below the navigation bar, the main area displays 'MySQL Connections' with two entries: 'Local instance MySQL80' (with connections for 'root' and 'localhost:3306') and 'New' (with connections for 'admin' and 'ec2-user@54.226.164.225:22'). A vertical sidebar on the left contains icons for Home, Database, Tools, and Help.

Manage Server Connections

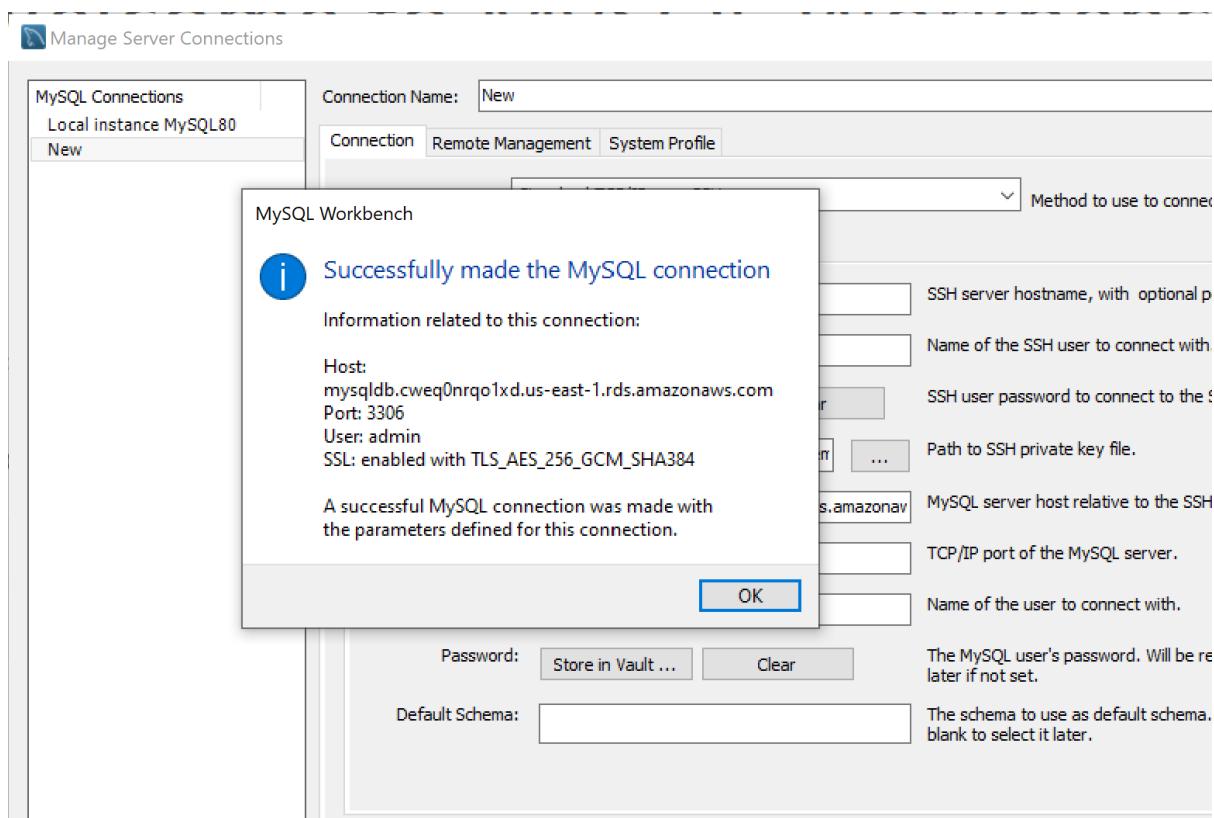
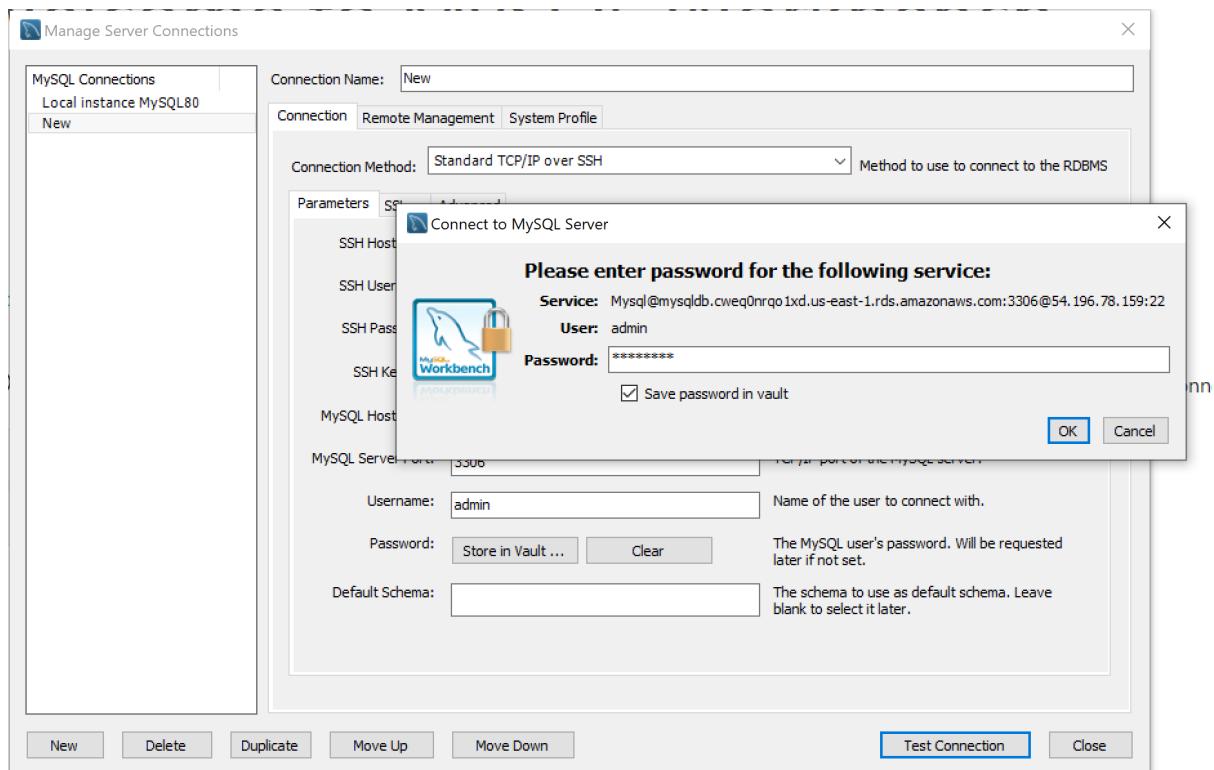
Connection Name: New

Connection Method: Standard TCP/IP over SSH

Parameters

- SSH Hostname: 54.196.78.159:22
- SSH Username: ec2-user
- SSH Password: (fields for Store in Vault, Clear)
- SSH Key File: C:\Users\yohit\Downloads\bastion.pem
- MySQL Hostname: mysqldb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com
- MySQL Server Port: 3306
- Username: admin
- Password: (fields for Store in Vault, Clear)
- Default Schema:

Buttons at the bottom: New, Delete, Duplicate, Move Up, Move Down, Test Connection, Close



The screenshot shows the MySQL Workbench interface. On the left, there's a sidebar titled "MySQL Connections" with a "+ New" button. It lists a connection named "Local instance MySQL80" with users "root" and "admin" and host "localhost:3306". Below this is a "SCHEMAS" tree view. The "bastionsshdb" schema is expanded, showing its "Tables" (including "pet1"), "Views", "Stored Procedures", and "Functions". Another schema, "sys", is also listed. At the top of the screen, there's a banner with the MySQL logo and text about the tool's features. A modal window titled "Opening SQL Editor" is displayed, showing a progress bar and the message "Please stand by...".

MySQL Workbench is the official graphical user interface (GUI) tool for MySQL. It allows you to design, create and browse your database schemas, work with database objects and insert data as well as design and run SQL queries to work with stored data. You can also migrate schemas and data from other database vendors to your MySQL database.

Browse Documentation >  Read the Blog > [Opening SQL Editor](#)

MySQL Connections [+ New](#)

Local instance MySQL80

root
localhost:3306

New

admin
ec2-user@54.196.78.159:22

Cancel

SCHEMAS

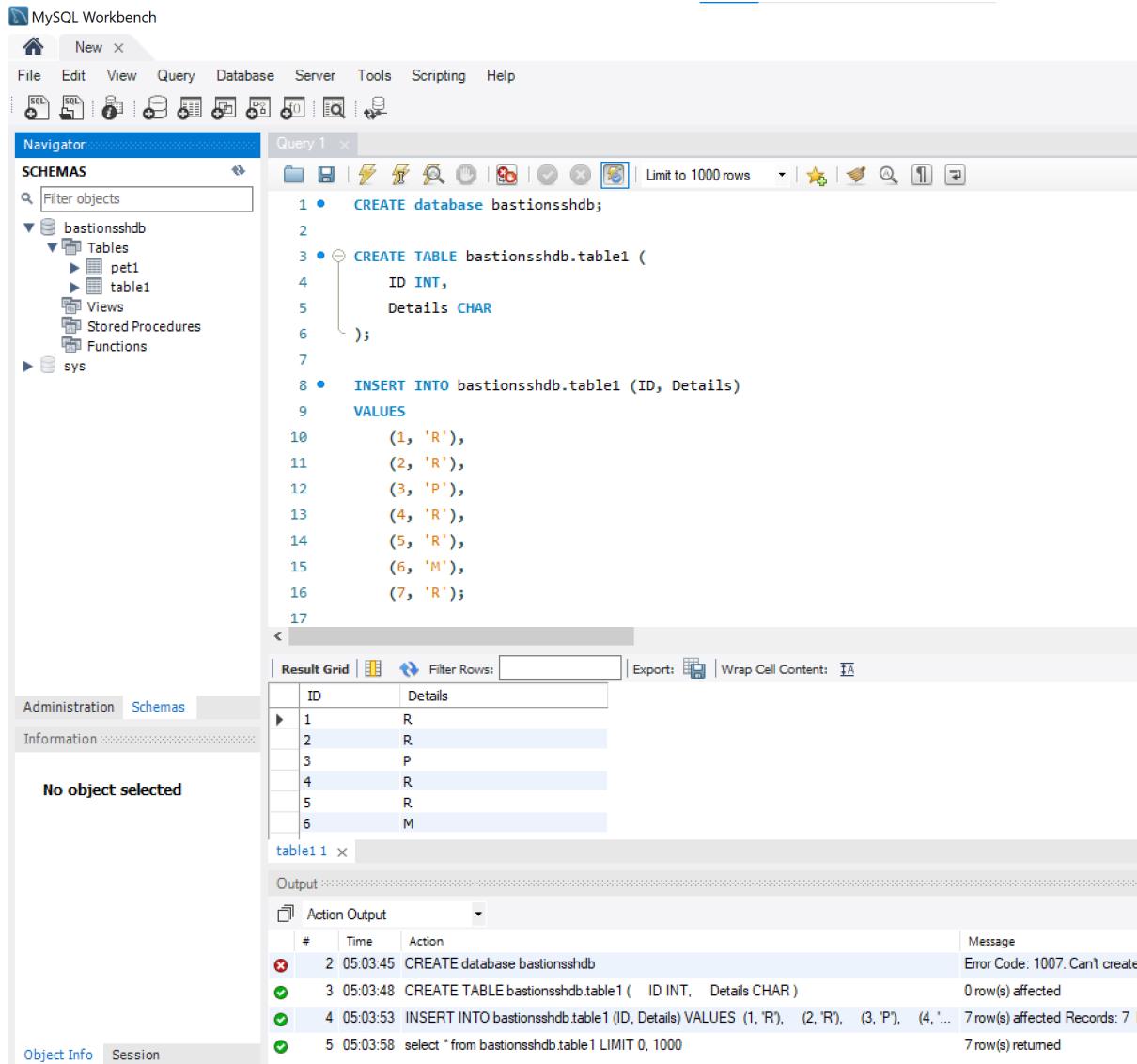
Filter objects

bastionsshdb

- Tables
 - pet1
- Views
- Stored Procedures
- Functions

sys

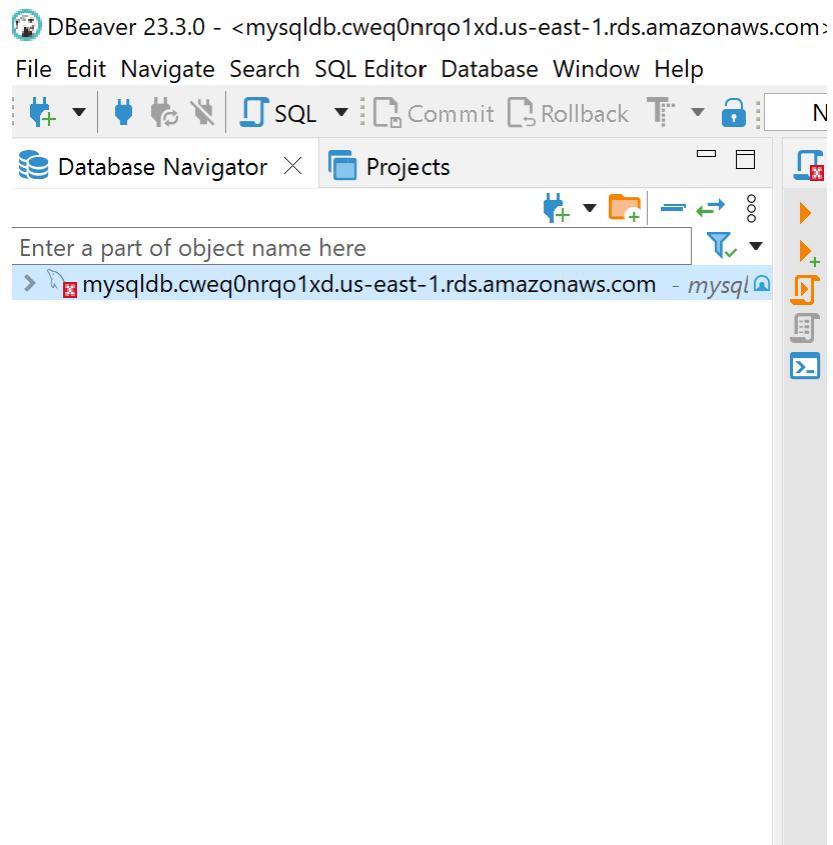
An SQL editor instance for 'New' is opening and should be available in a moment.
Please stand by...



[Troubleshoot: In case you unable to establish the **SSH connection** from the **Bastion Host** to the **RDS MySQL DB instance** then go for following check:

- I. Check the Inbound Security Group rules of both **Bastion Host** and **RDS DB instance**
- II. Check the current **My IP** of **Bastion host** which can keep changing whenever you change the **Internet/WiFi source.**]

b. SSH connection via DBeaver



Connection "mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com" configuration

Connection settings

MySQL connection settings

Main Driver properties SSH SSL + Network configurations...

Server

Connect by: Host URL

URL: jdbc:mysql://mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com:3306/

Server Host: mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com Port: 3306

Database:

Authentication (Database Native)

Username: admin

Password: •••••• Save password

Advanced

Server Time Zone: Auto-detect

Local Client: MySQL Server 8.0

(i) You can use variables in connection parameters.

Driver name: MySQL Driver Settings Driver license

Test Connection ... OK Cancel

Connection "mysqladb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com" configuration

Connection settings

MySQL connection settings

Connection settings

- Initialization
- Shell Commands
- Client identification
- Transactions
- General
- Metadata
- Errors and timeouts
- Data Transfer

➤ Data Editor

➤ SQL Editor

Main Driver properties **SSH** SSL

+ Network configurations...

Use SSH Tunnel Profile:

Settings

Host/IP: Port:
User Name:
Authentication Method:
Private Key:
Passphrase: Save Password/Passphrase

▶ Jump server settings
▶ Advanced settings

(i) You can use variables in SSH parameters. [SSH Documentation](#)

Connection "mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com" configuration

Connection settings

MySQL connection settings

Connection settings

- Initialization
- Shell Commands
- Client identification
- Transactions
- General
- Metadata
- Errors and timeouts
- Data Transfer

Data Editor

SQL Editor

Main | Driver properties | SSH | SSL | + Network configurations...

Use SSH Tunnel Profile:

Settings

Host/IP: 54.196.78.159 Port: 22

User Name: ec2-user

Authentication Method: Public Key

Private Key: C:\Users\rohit\Downloads\bastion.pem

Passphrase: Save Password/Passphrase

Progress Information

Jump to: Instantiate SSH tunnel

Instantiate tunnel to 54.196.78.159:22

Connection confirmation

The authenticity of host 54.196.78.159 can't be established. ssh-ed25519 key fingerprint is 54:ed:46:9b:2b:7d:b6:e3:4f:2a:ee:a1:55:03:50:24. Are you sure you want to continue connecting?

Yes No

Test Connection ... OK Cancel

Success

Connected!

Client version: SSHJ_0.34.0

Server version: OpenSSH_8.7

OK

This screenshot shows the MySQL Workbench interface for connecting to a MySQL database via SSH tunneling. The main window displays the connection configuration with the 'SSH' tab selected. It includes fields for Host/IP (54.196.78.159), User Name (ec2-user), Authentication Method (Public Key), Private Key (C:\Users\rohit\Downloads\bastion.pem), and Passphrase. A progress bar indicates the process of instantiating the SSH tunnel. A separate 'Connection confirmation' dialog box is open, warning the user about the SSH key fingerprint and asking if they want to continue connecting. Below the main window, a 'Success' dialog box is displayed, stating 'Connected!' and providing the client and server versions. At the bottom, there are 'OK' and 'Cancel' buttons.

Connection "mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com" configuration

Connection settings

MySQL connection settings

Connection settings

- Initialization
- Shell Commands
- Client identification
- Transactions

General

Metadata

Errors and timeouts

Data Transfer

➤ Data Editor

➤ SQL Editor

Main Driver properties SSH SSL

+ Network configurations...

Use SSH Tunnel Profile: [dropdown]

Settings

Connection test

Connected (8687 ms)

Server: MySQL 8.0.33

Driver: MySQL Connector/J mysql-connector-j-8.2.0 (Revision: 06a1f724497fd81c6a659131fda822c9e5085b6c)

OK Details >>

Test tunnel configuration [You can use variables in SSH parameters.](#) [SSH Documentation](#)

Database Navigator Projects

Enter a part of object name here

mysqlDb.cweq0nrqo1xd.us-east-1.rds.amazonaws.com - mysql

➤ Databases

- bastionsshdb
 - Tables
 - table1 16K
 - Views
 - Indexes
 - Procedures
 - Triggers
 - Events
 - sys
 - Users
 - Administer
 - System Info

columns 1

DESCRIBE bastionsshdb.pet1 | Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	name	varchar(20)	YES		[NULL]	
2	owner	varchar(20)	YES		[NULL]	
3	species	varchar(20)	YES		[NULL]	
4	sex	char(1)	YES		[NULL]	
5	birth	date	YES		[NULL]	
6	death	date	YES		[NULL]	

DBeaver 23.3.0 - <mysql:db:cweq0nrqo1xd.us-east-1.rds.amazonaws.com> Script

File Edit Navigate Search SQL Editor Database Window Help

SQL Commit Rollback Auto mysql:db:cweq0nrqo1xd.us-east-1.rds.amazonaws.com < N/A > Connections

Database Navigator Projects <mysql:db:cweq0nrqo1xd.us-east-1.rds.amazonaws.com> Script Connections

Shows all projects and their contents. Supports project management.

```

DESCRIBE bastionsshdb.pet1;
+-----+-----+
| name | VARCHAR(20) |
| owner | VARCHAR(20) |
| species | VARCHAR(20) |
| sex | CHAR(1) |
| birth | DATE |
| death | DATE |
+-----+-----+-----+-----+-----+-----+
```

mysql:db:cweq0nrqo1xd.us-east-1.rds.amazonaws.com - mysql

Databases

- bastionsshdb
 - Tables
 - pet1
 - table1
 - Views
 - Indexes
 - Procedures
 - Triggers
 - Events
- sys
- Users
- Administrator
- System Info

Enter a part of object name here

SELECT * FROM bastionsshdb.pet1;

INSERT INTO bastionsshdb.pet1 VALUES ('Puffball','Diane','hamster','f','1999-03-30',NULL), ('Roxy','Rohit','hamster','f','1999-09-04','1999-03-30'), ('Tommy','Paul','hamster','f','1999-03-30',NULL), ('Bruno','Monu','hamster','f','1999-03-30','1999-11-29');

select owner from bastionsshdb.pet1;

select * from bastionsshdb.pet1;

pet1 1

select * from bastionsshdb.pet1 | Enter a SQL expression to filter results (use Ctrl+Space)

Grid	name	owner	species	sex	birth	death
1	Puffball	Diane	hamster	f	1999-03-30	[NULL]
2	Roxy	Rohit	hamster	f	1999-09-04	1999-03-30
3	Tommy	Paul	hamster	f	1999-03-30	[NULL]
4	Bruno	Monu	hamster	f	1999-03-30	1999-11-29

Value X

Puffball

Project - General

Name

DataSource

References

- <https://www.youtube.com/watch?v=CpW85hqLIRc>
- <https://www.youtube.com/watch?v=qulcnNu8g7o>