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Tutorial – Cloud Database and Automated Topic Kafka creation

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The goal of this document is to show a database available in a cloud environment. The project should be built from these indications.
The usage of a cloud database requires an Amazon AWS account.

Scalability:
RDS virtualization could be scaled, creating different SCHEMAS, or DATABASES instances, for different Application services.

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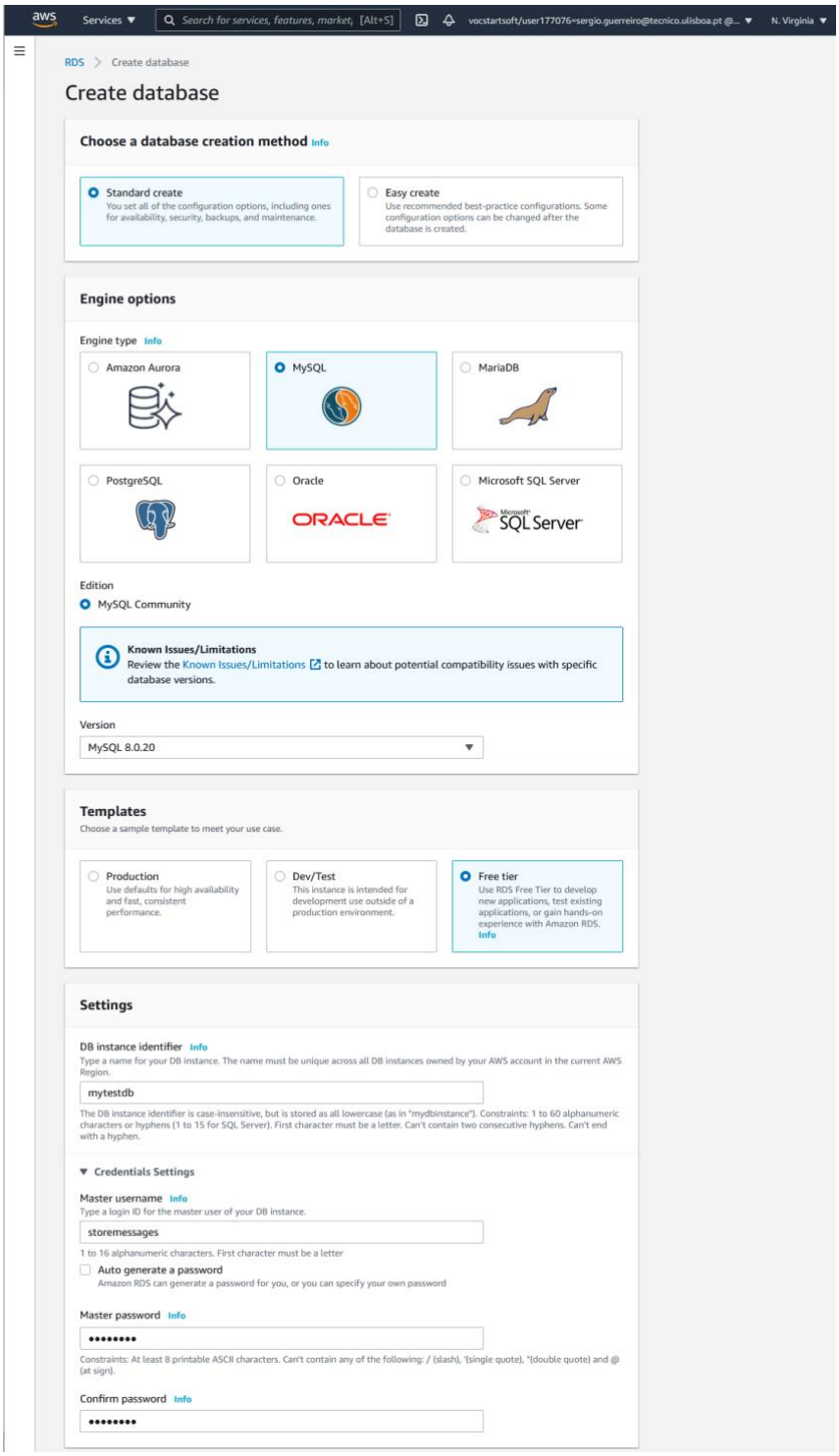
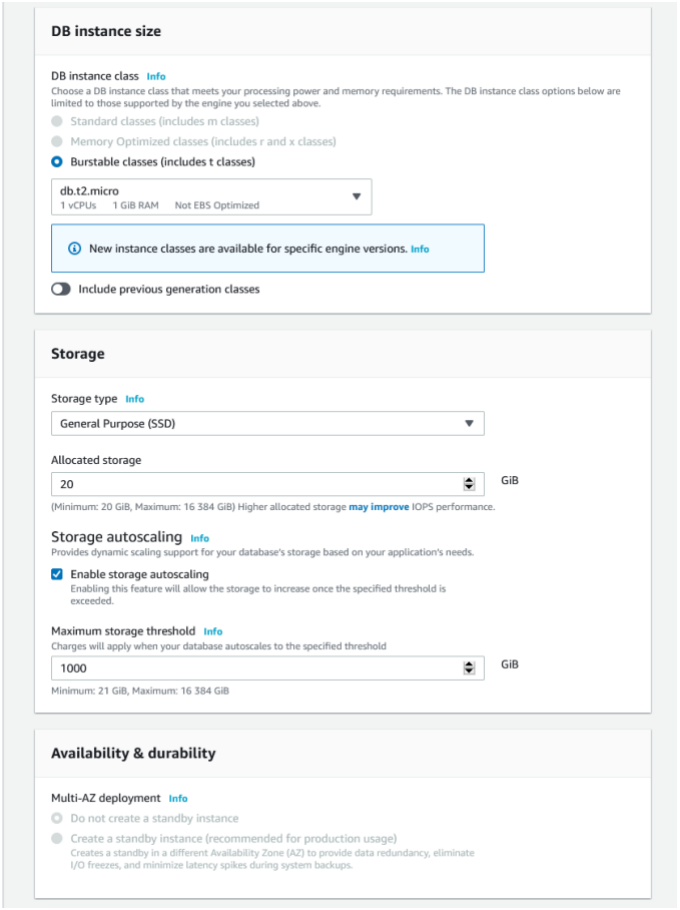
The goal of this section is to exemplify how to create your own cloud database in AWS, to access its contents through a database workbench, and then creating a JAVA microservice to consume Kafka messages that are then inserted in the cloud database.

1. Go to your AWS account console and click on Database RDS -> My SQL and select the following configurations in step 2:




DB instance size
DB instance class Info
Choose a DB instance class that meets your processing power and memory requirements. The DB instance class options below are limited to those supported by the engine you selected above.
Standard classes (includes m classes)
Memory Optimized classes (includes r and x classes)
Burstable classes (includes t classes)
db.t2.micro
1 vCPUs 1 GiB RAM Not EBS Optimized
New instance classes are available for specific engine versions. Info
Include previous generation classes
Storage
Storage type Info
General Purpose (SSD)
Allocated storage
20
GiB
(Minimum: 20 GiB, Maximum: 16 384 GiB) Higher allocated storage may improve IOPS performance.
Storage autoscaling Info
Provides dynamic scaling support for your database's storage based on your application's needs.
Enable storage autoscaling
Enabling this feature will allow the storage to increase once the specified threshold is exceeded.
Maximum storage threshold Info
Charges will apply when your database autoscales to the specified threshold
1000
GiB
Minimum: 21 GiB, Maximum: 16 384 GiB
Availability & durability
Multi-AZ deployment Info
Do not create a standby instance
Create a standby instance (recommended for production usage)
Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.

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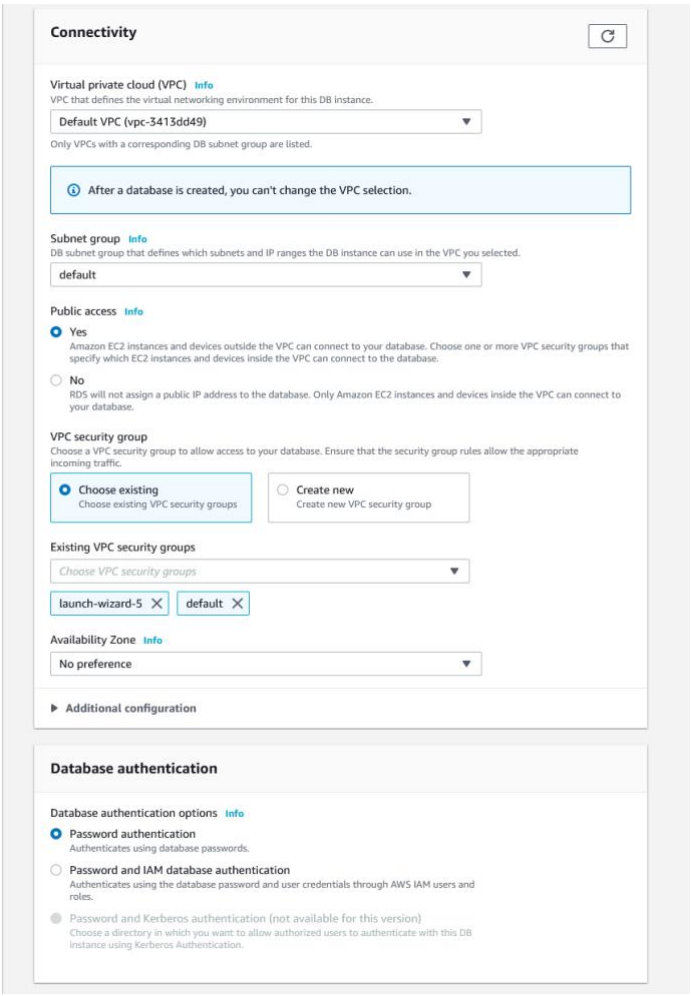
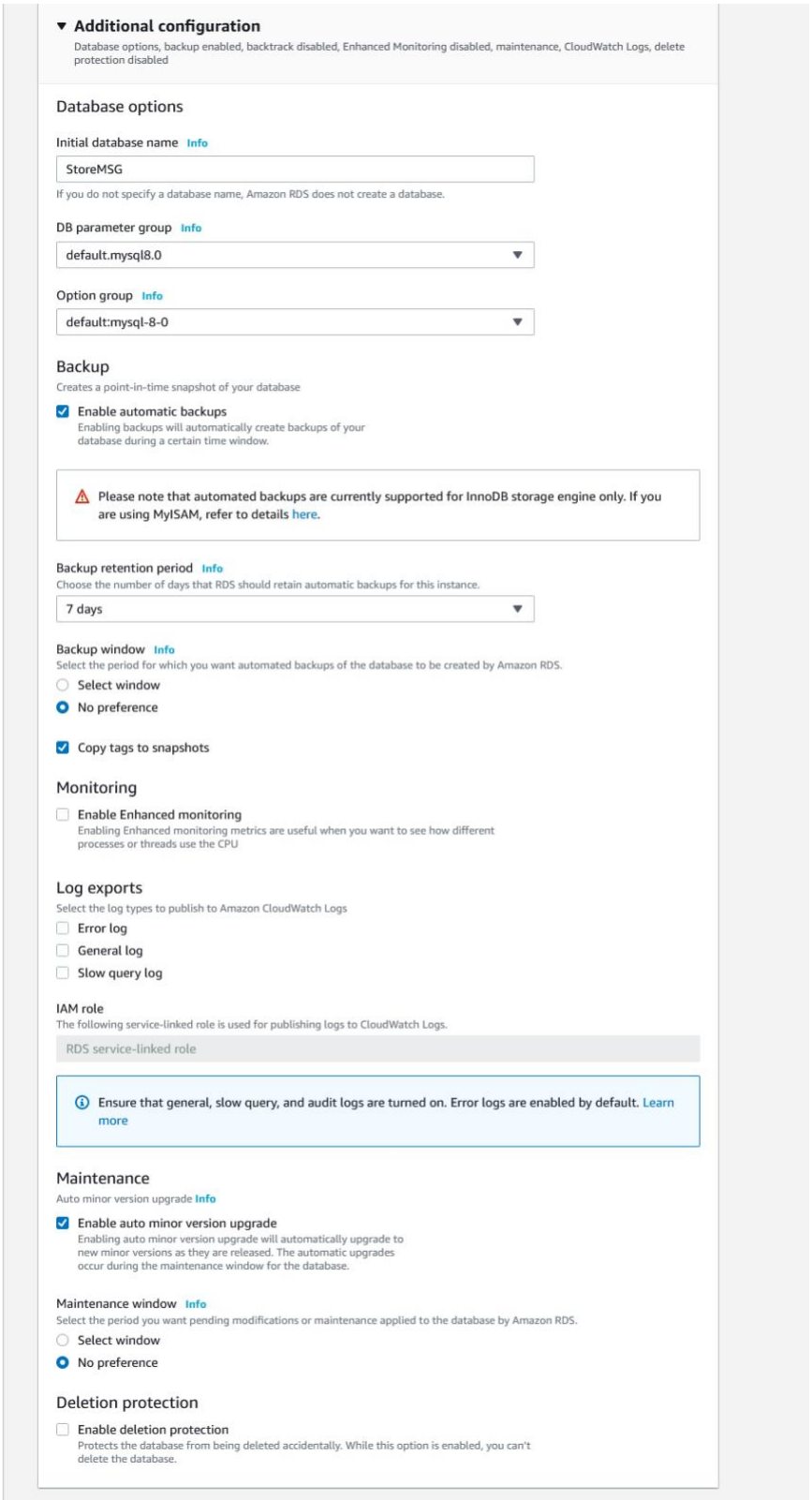
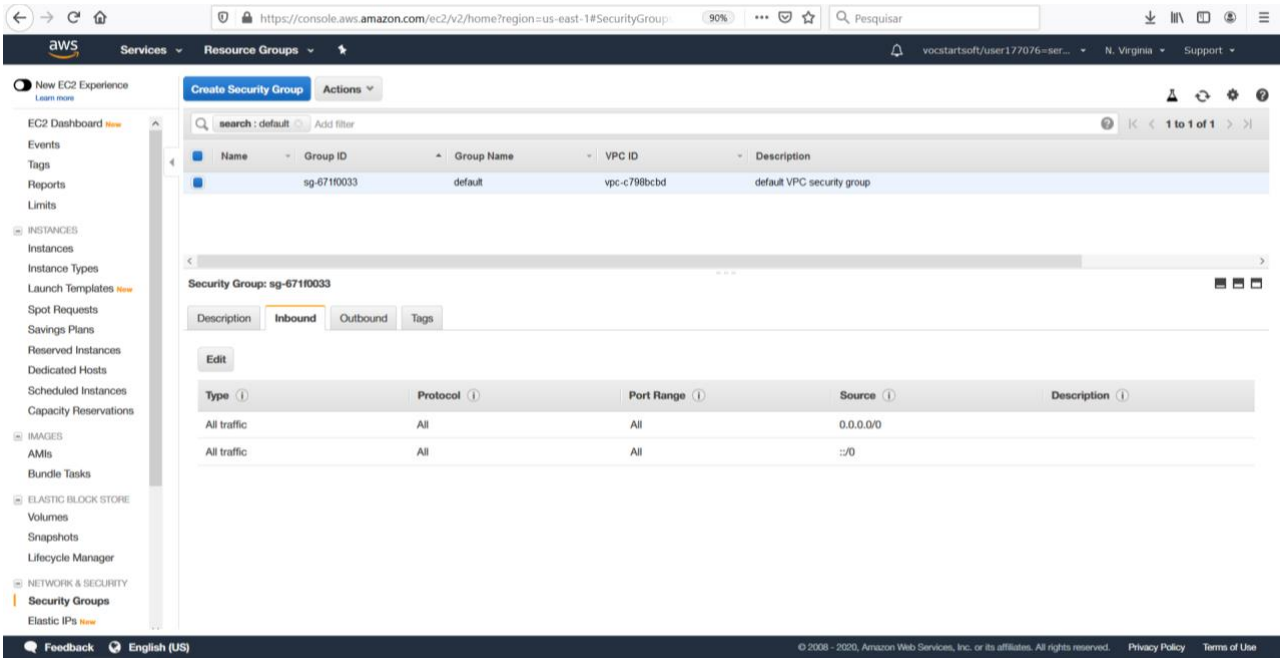

Connectivity
Virtual private cloud (VPC) Info
VPC that defines the virtual networking environment for this DB instance.
Default VPC (vpc-3413dd49)
Only VPCs with a corresponding DB subnet group are listed.
After a database is created, you can't change the VPC selection.
Subnet group Info
DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.
default
Public access Info
Yes
Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.
No
RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.
VPC security group
Choose a VPC security group to allow access to your database. Ensure 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 VPC security groups
launch-wizard-5
default
Availability Zone Info
No preference
Additional configuration
Database authentication
Database authentication options Info
Password authentication
Authenticates using database passwords.
Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.
Password and Kerberos authentication (not available for this version)
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.



Hint: Later, check if you VPC configuration allows connections from anywhere in the internet. Choose the VPC Security groups and edit the configuration similarly with:



2. You can now check if the database is started.

3. Use your MySQL database client (for example MySQL workbench), connect to your RDS AWS database and execute the following scripts:

```
DROP DATABASE IF EXISTS collectedMSGs;
CREATE DATABASE IF NOT EXISTS collectedMSGs;
```

```
USE collectedMSGs;
DROP TABLE IF EXISTS Message;

CREATE TABLE Message( offset INTEGER PRIMARY KEY,
                     groupId VARCHAR(100) NOT NULL,
                     contentKey VARCHAR(100),
                     contentValue VARCHAR(1000));
```