AWS Workshop

Jaime Canizales

City University of New York

jaime.canizales@hunter.cuny.edu

September 14, 2024

Overview

What is AWS?

Problem Statement

AWS (Amazon Web Services) is a comprehensive cloud computing platform provided by Amazon. It offers a wide range of on-demand services, such as compute power, storage, databases, and networking, as well as advanced technologies like machine learning, artificial intelligence, Internet of Things (IoT), and more. AWS enables individuals, businesses, and organizations to build and deploy applications without the need to own or manage physical hardware.

Why use AWS? Part 1

- AWS provides a great solution to scaling. As our software grows in demand, the servers hardware must also scale to match it. This can be expensive because more hardware cost most more money, physical space, set up hassels and so forth. AWS provides servers across the the world, that remove the hassel of owning your own local servers, and provide computational speed ups as you can have servers all over the world in the case your software goes international.

Why use AWS? Part 2

- AWS solves the crossplatform development issue. In aws you can standardize the development of your software so that all your engineers can test and deploy on the same cloud network and computers!

Why use AWS? Part 3

- AWS is the most used of all the cloud computing services. (others: Microsoft azure, google cloud, ...)
- You are most likely to use this cloud computing service when you get a job
- One of the easier cloud computing services to learn because there is a lot of documentation due to its extensive use in the industry.

Some key services offered by AWS include:

- Amazon EC2 (Elastic Compute Cloud): Virtual servers to run applications.
- Amazon S3 (Simple Storage Service): Scalable object storage for files and data.
- Amazon RDS (Relational Database Service): Managed relational databases like MySQL, PostgreSQL, and Oracle.
- AWS Lambda: Serverless computing to run code without managing servers.

More key services:

- Amazon CloudFront: Content delivery network (CDN) for delivering websites and applications globally.
- AWS is known for its scalability, reliability, and cost-effectiveness, serving both startups and large enterprises worldwide.
- IAM and Organizations: facilitates collaboration, by using policies to give different permissions to different employees
- Works well with version control like git! you can set yor git server to build and deploy software from aws(continuous integration)
- Cloudformation allows you to save network and software architecture set ups to templates

Access Key Setup

- To ease communication with S3 and other servers we must set up an access key.
- Top righthand click on name, then click on security credentials, then click create access key.
- Make sure to store the secret key somewhere safe as this is the only time you will see it.

S3 Setup

- Load files into s3 bucket. link
- From an EC2 instance you can get files from S3 bucket with command: **aws s3 cp s3://my2awsbucket/file_absolute_path .**
- From an EC2 instance you can upload files to S3 bucket with command:**aws s3 cp fileName s3://my2awsbucket/**

EC2 Setup

- Go through creating ec2 instance (you can leave everything as default). link
- ssh into ec2 instance, and run **sudo dnf update -y** and **sudo dnf install postgresql15** to install psql
- Run **aws configure** and add your access key
- Reference last slide to get data from S3

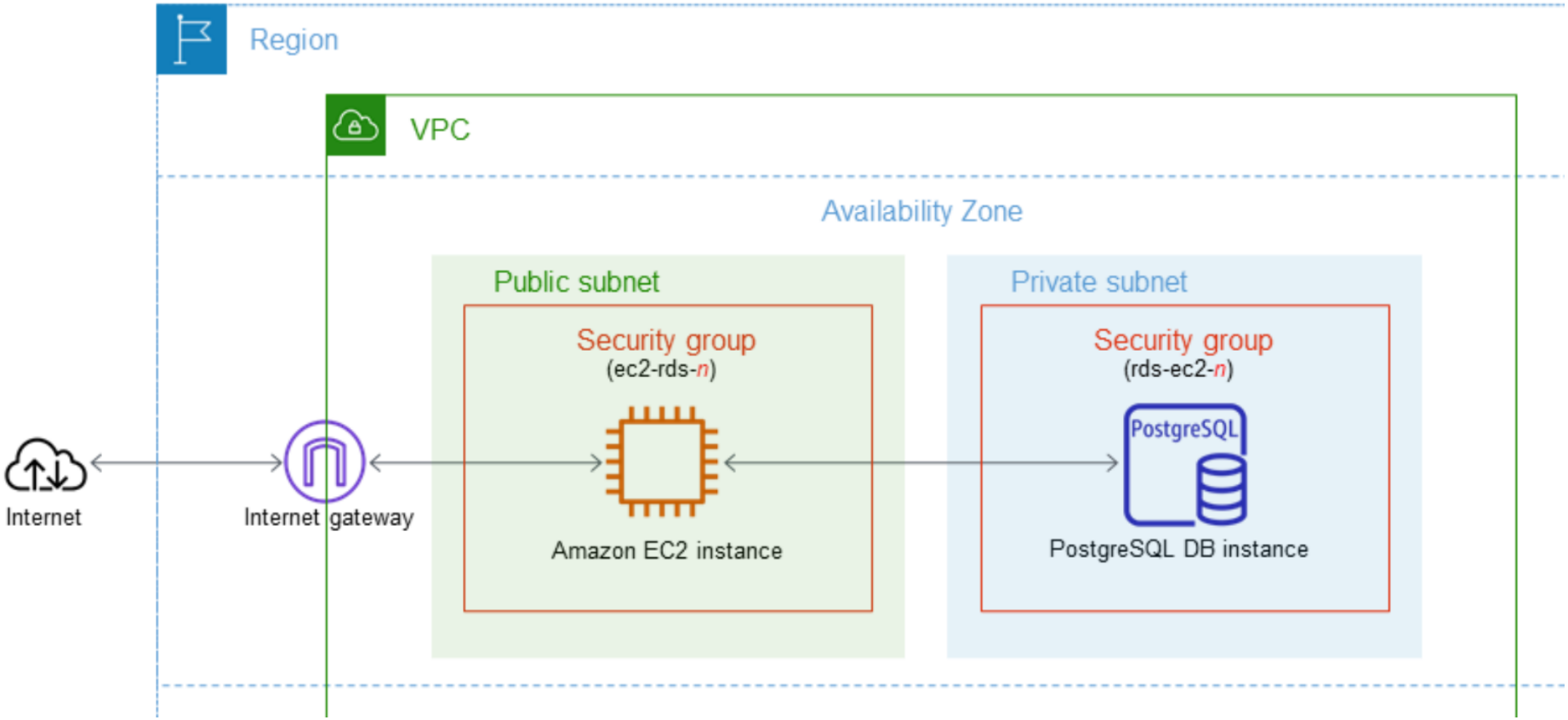
RDS Setup

- Create rds (relational database server) using easy create, postgresql, and connect to ec2 instance. link
- ssh back into ec2 instance and run **psql –host=endpoint –port=5432 –dbname=postgres –username=postgres** to access database server
- Check out file commands.sql to pass data to sql database

Connect to vscode

- Connect vscode Documentation: link
- vscode extension Remote ssh
- Modify /.ssh/config to include networking information of ec2 instance

Software Architecture



- Ensure everything is in the same vpc(virtual private network), like in picture.