**Database**

**RDS** (SQL or Structured data)– Relational Database system (in general RDBMS) (RDS is multiple DB products), used for structure Data- SQL (MSSQL, oracle, MySQL, Amazon Aurora, postgres)

**DynamoDB** (**NoSQL** or Unstructured data) – AWS Developed, uses **Key & value** pair.

**Amazon DocumentDB** (**MongoDB**) – **NoSQL** based on MongoDB. (**collections & documents** pair)

**Amazon Redshift** (**PostgreSQL**) – **PostgreSQL** based **Datawarehousing** solution. Mainly used for reporting like running SQL query on a Corona effected list (e.g.: search for 20 years below effected in TS)

**ElastiCache** – **In-memory database** used to speed up your **web application.**

**RDS:**

First created **subnet group** –to **deploy** databases in multiple **subnets.**

1, Database -> RDS -> Subnet groups (left panel) -> Create DB Subnet Group (click on) ->

Name, vpc, available zones (us-east 1a, us-east 1b, us-east 1c), subnets (public subnets).

(Subgroup is created with 3 submits in 3 available zones.)

**Databases (MySQL 8.0.11-> here -> 8 major. 0 is minor. 11 is micro version)**

2, Database -> RDS -> Databases (left panel) -> Create database ->

Standard create, MySQL, MySQL 8.0.11, Production, DB instance identifier, Master username, Master password, Confirm password, DB instance class, Burstable classes (includes t classes), db.t3.medium, Storage type, Allocated storage, Availability & durability, Multi-AZ deployment(Create a standby instance (recommended for production usage)), Connectivity, Virtual private cloud (VPC), Subnet group(which is created), Public access(Yes), VPC security group, Choose existing(AWSB26-VPC-Allow\_All), Database port(3306).

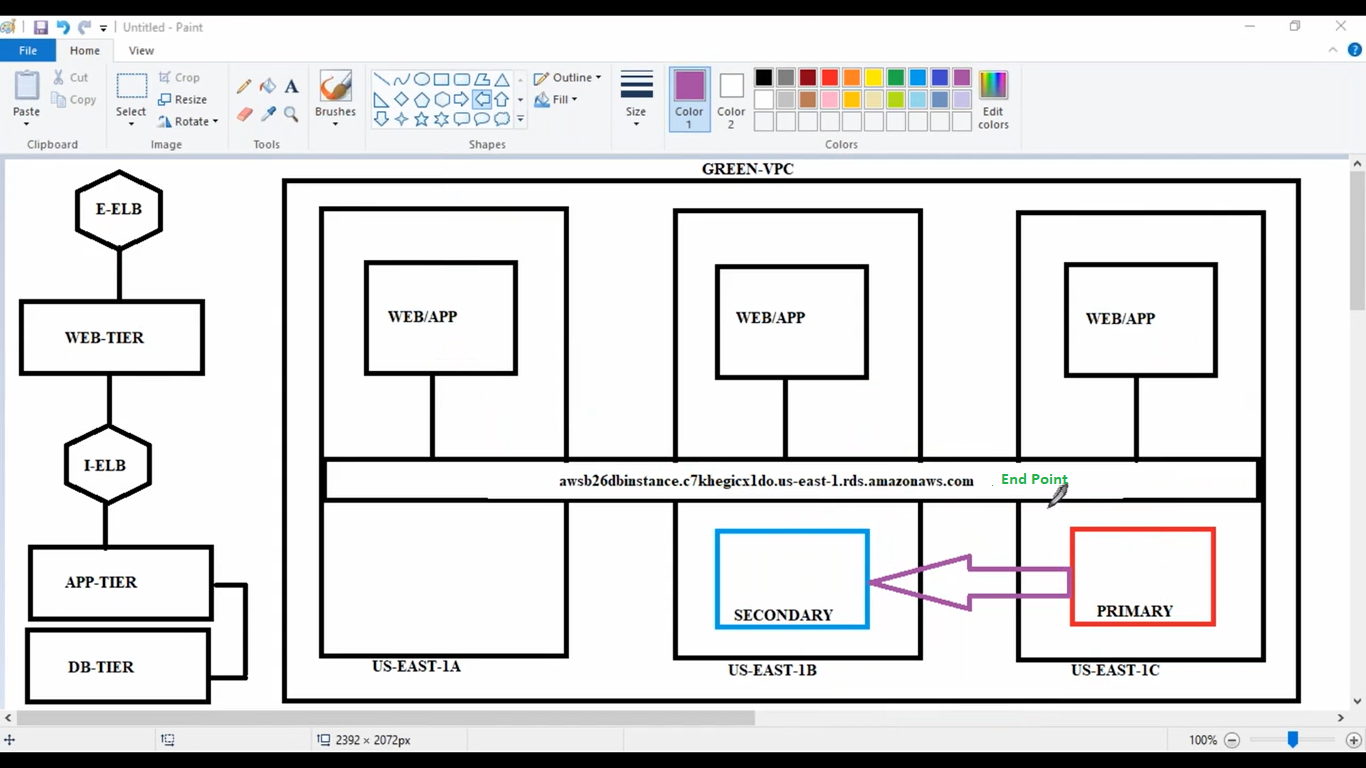
**Database Design**

**External load balancer which is Internet-facing**

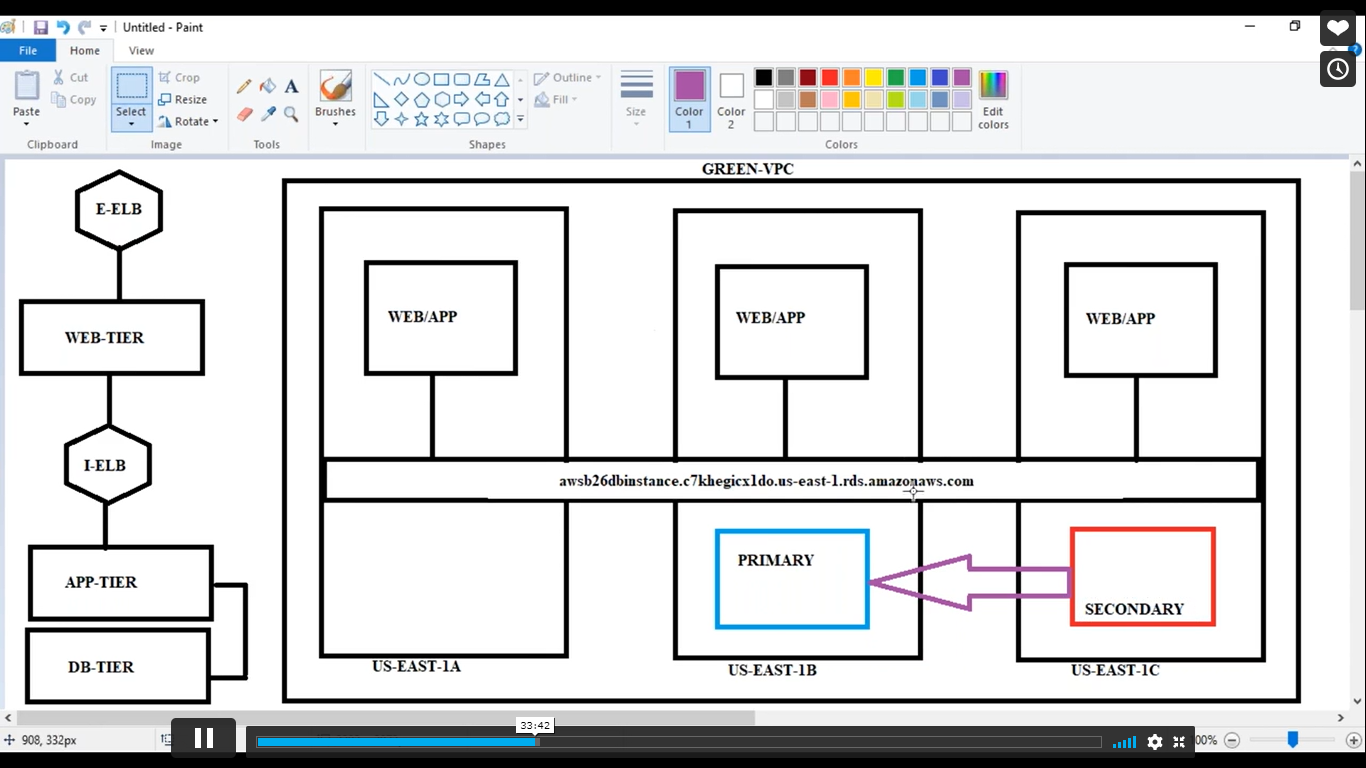
**Internal load balancer which is not-Internet-facing**

**When Database is created, primary and secondary databases will be created (us-east-1c primary, us-east-1b secondary)**

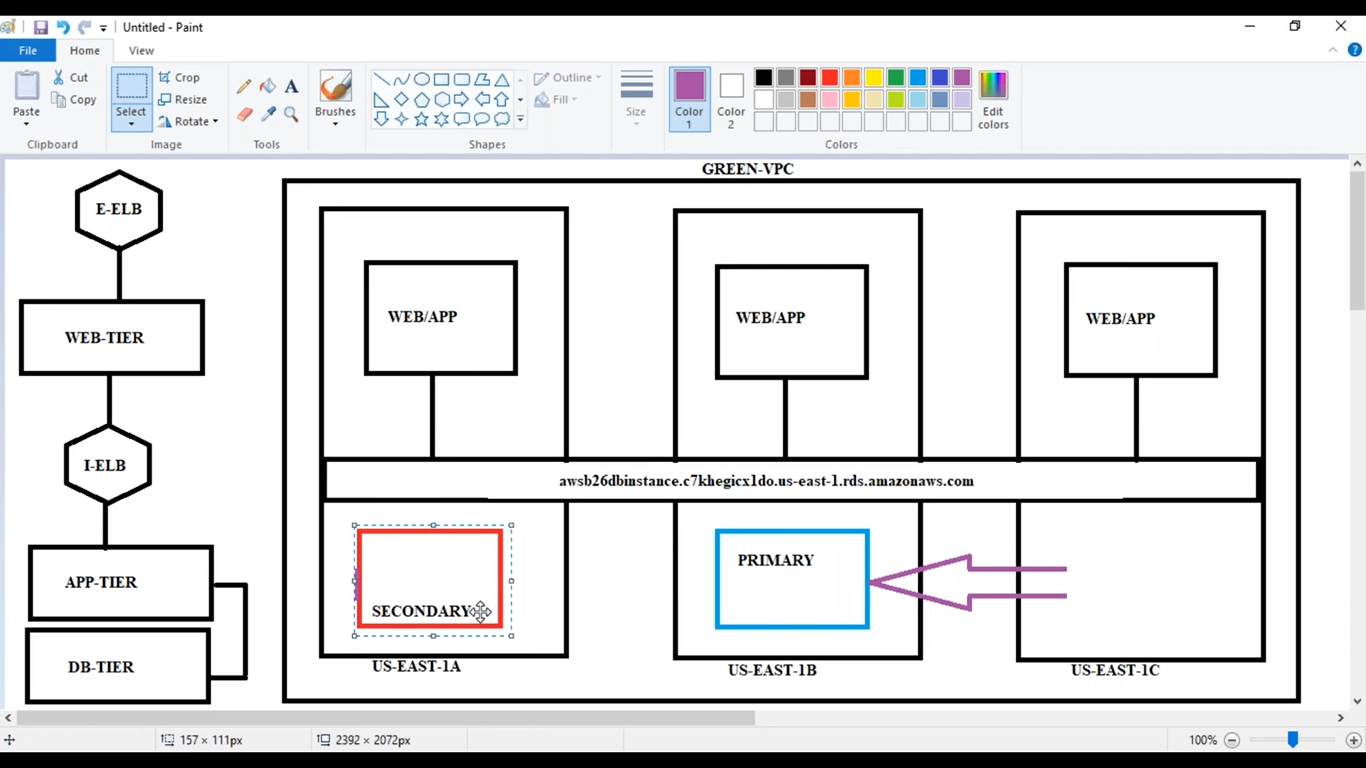
* The data from any web/App is sent to database in **us-east-1c** because it is **primary**.

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* If primary database fails, secondary DB becomes primary **and** primary DB as secondary

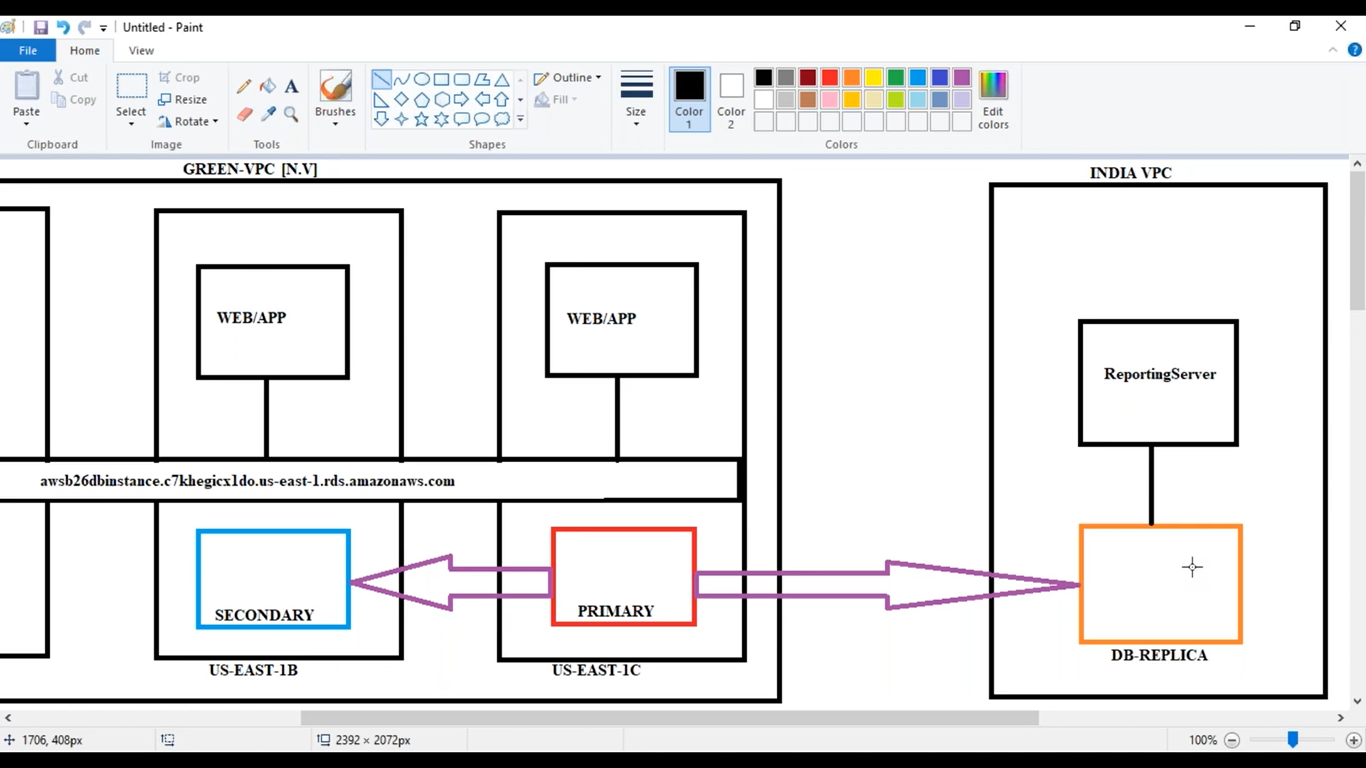


* If DB in us-east-1c don’t come back , then us-east-1a becomes secondary



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Also, we can keep **copy of Primary database** in **another region** called **Read-Replica.** To take **backup** without **Latency.**



**Read replica**:

As per the above diagram, create read replica to see how it be.

3, Database -> RDS -> Databases (left panel) -> select our created database (awsb26dbinstance) -> Actions (drop down) -> Create read replica -> DB instance identifier (awsb26dbreplica) [other name for source database (awsb26dbinstance)]

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Connect above created database to MySQL, for that we launch windows instance and install MySQL in it and connect.

4, Ec2 -> Launch instance -> windows ->

5, install MySQL – then click on “+” symbol – new name for server, in place of Hostname: paste End point URL, username & password we given.[do same with replica RDS database]

After setup

* Use this database.

[https://drive.google.com/drive/folders/1RrQWhbdipZ6G818FfGDGYqNId6CR5YXN - 5. Working\_MyFlixDB.sql](https://drive.google.com/drive/folders/1RrQWhbdipZ6G818FfGDGYqNId6CR5YXN%20-%205.%20Working_MyFlixDB.sql)

* Install python

Open Cmd

**Python --version**

**Pip3**



These two should be installed.

Notepad.exe app.py

Paste python code

import sqlalchemy as sal



import pymysql



from sqlalchemy import create\_engine



cnx = create\_engine('mysql+pymysql://admin:**adminadmin**@**awsb26dbinstance.cpgylav2kbnp.us-east-1.rds.amazonaws.com**/myflixdb')



data = cnx.execute("select \* from movies").fetchall()

for item in data:

print(item)



* if we want to check secondary DB become primary means

select DB -> Actions(dropdown) -> Reboot.

after reboot we can see secondary DB (us-east -1b) become primary.

We can also check by:

CMD: **nslookup** awsb26dbinstance.cpgylav2kbnp.us-east-1.rds.amazonaws.com

By above command ip address of DB changes to secondary DB (which is now primary DB)