Introduction Amazon Web Services (AWS)

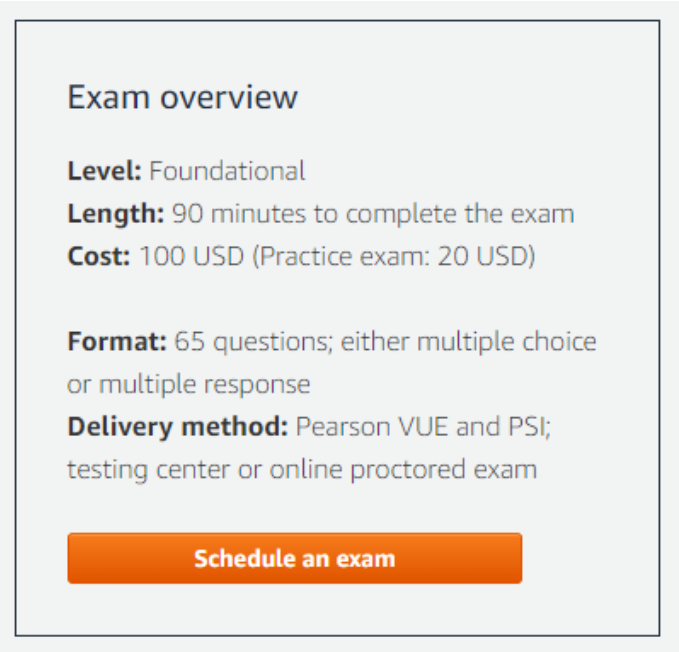
Dr. Villanes

Topics covered today

- AWS Cloud Practitioner Certification
- Certification Resources
- Certification Tips
- AWS RDS
- Lab #2: AWS EC2

AWS Cloud Practitioner Certification

- Define **what the AWS Cloud is and the basic global infrastructure**
- Describe basic **AWS Cloud architectural principles**
- Describe the **AWS Cloud value proposition**
- Describe **key services on the AWS platform and their common use cases** (for example, compute and analytics)
- Describe **basic security and compliance aspects of the AWS platform and the shared security model**
- Define the **billing, account management, and pricing models**
- Identify **sources of documentation or technical assistance** (for example, whitepapers or support tickets)
- Describe **basic/core characteristics of deploying and operating in the AWS Cloud**



https://aws.amazon.com/certification/certified-cloud-practitioner/

Certification Resources

Official AWS Resources:

- AWS Cloud Practitioner Essentials
- AWS Sample Questions
- Official Practice Exam

External Resources:

- Ultimate AWS Certified Cloud Practitioner CLF-C02
- Udemy Practice Exams (6 practice exams – 65 questions each)
- Cloud Guru
- Free Labs + AWS Academy

Certification Resources

Official AWS Resources:

- AWS Cloud Practitioner Essentials ✓
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- Free Labs + AWS Academy ✓

Certification Resources

Official AWS Resources:

- AWS Cloud Practitioner Essentials ✔ 😐 *I didn't get too much out of it*
- AWS Sample Questions ✔ 😎 *Way too easy*
- Official Practice Exam ✔ *Same level as the exam*

External Resources:

- Ultimate AWS Certified Cloud Practitioner CLF-C02 ❌ *Have heard EXCELLENT things about it*
- Udemy Practice Exams (6 practice exams – 65 questions each) ✔ 😀😀😀 *EXCELLENT*
- Cloud Guru ❌
- Free Labs + AWS Academy ✔

Study Tips

- The Udemy Practice Tests are super important
- Consider using the Udemy course as a main study resource
- Use the Udemy Practice Tests as a way to review the concepts
- I failed each of the Udemy Practice Tests during the first attempt, but scored 90%+ the second time I took one
- Make flashcards and review the concepts again and again
- This certification will make you more knowledge of cloud computing in general

Tips from last year’s class

- “The Udemy course with the 6 practice tests is especially helpful (take the tests until you can pass with over 90%)”
- “For items you need more help with, read from the AWS wiki page and watch YouTube videos for examples of practical use”
- Create a class quizlet

How to sign up for the exam?

- Must have taken and pass PCEP certification
- Must have NOT received a voucher for Tableau
- Take AWS Moodle and pass with 100%
- Email Dr. Villanes and Susan Chen to request a voucher to take the certification.

Questions about the Certification?

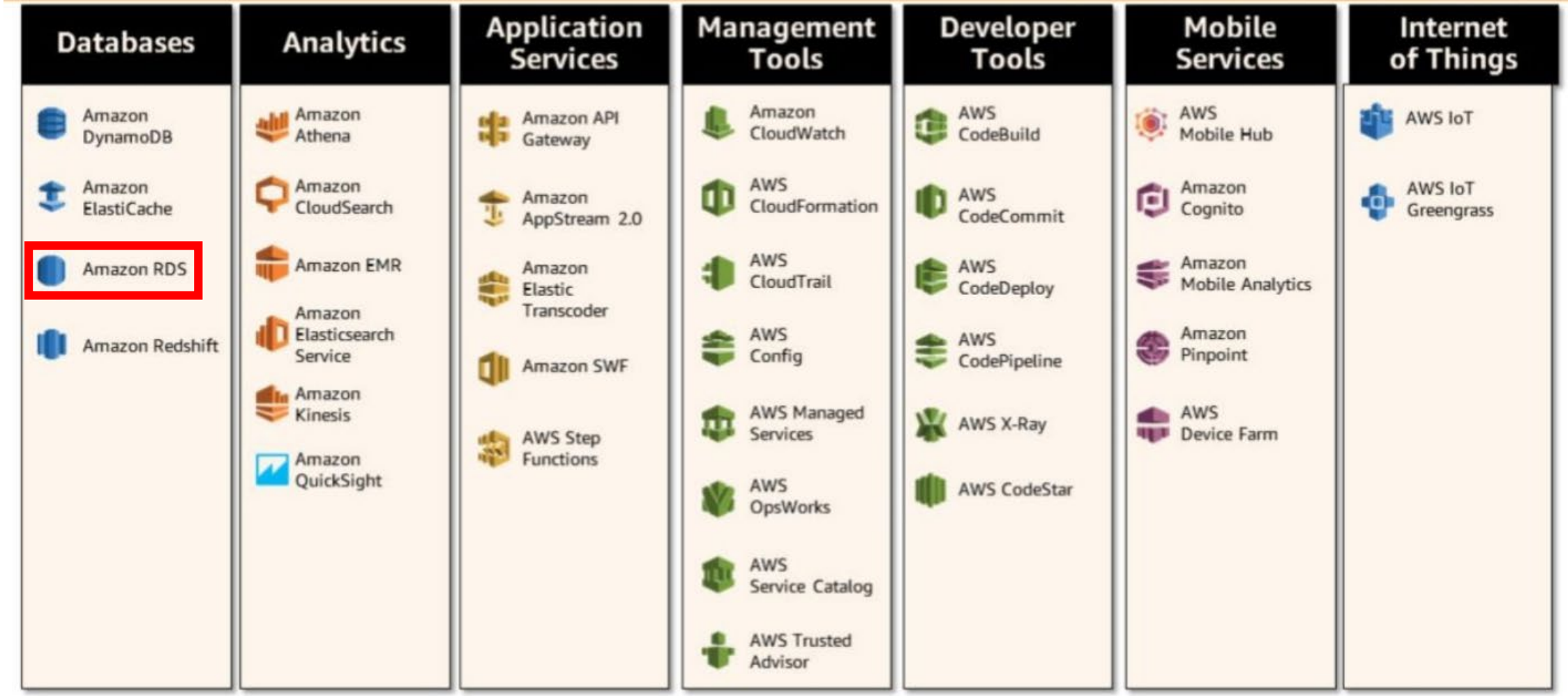
Top 25 AWS Services

1. Amazon EC2 (Elastic Compute Cloud)
2. Amazon RDS (Relational Database Services)
3. Amazon S3 (Simple Storage Service)
4. Amazon Lambda
5. Amazon CloudFront
6. Amazon Glacier
7. Amazon SNS (Simple Notification Service)
8. Amazon EBS (Elastic Block Store)
9. Amazon VPC (Virtual Private Cloud)
10. Amazon Kinesis
11. Amazon Auto-scaling
12. Amazon IAM (Identity and Access Management)
13. Amazon SQS (Simple Queue Service)
14. Amazon Elastic Beanstalk
15. Dynamo DB
16. Amazon ElastiCache

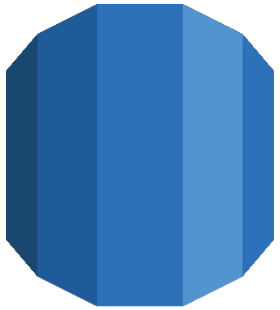
Business Continuity Plan

17. Amazon Redshift
18. Amazon Sagemaker
19. Amazon Lightsail
20. Amazon EFS (Elastic File System)
21. Amazon Cloudwatch
22. Amazon Chime
23. Amazon Cloud Directory
24. Amazon Cognito
25. Amazon Inspector

AWS Platform Services



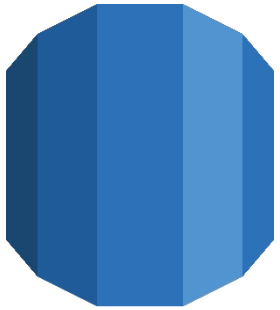
Amazon Relational Database Service (RDS)



Amazon RDS

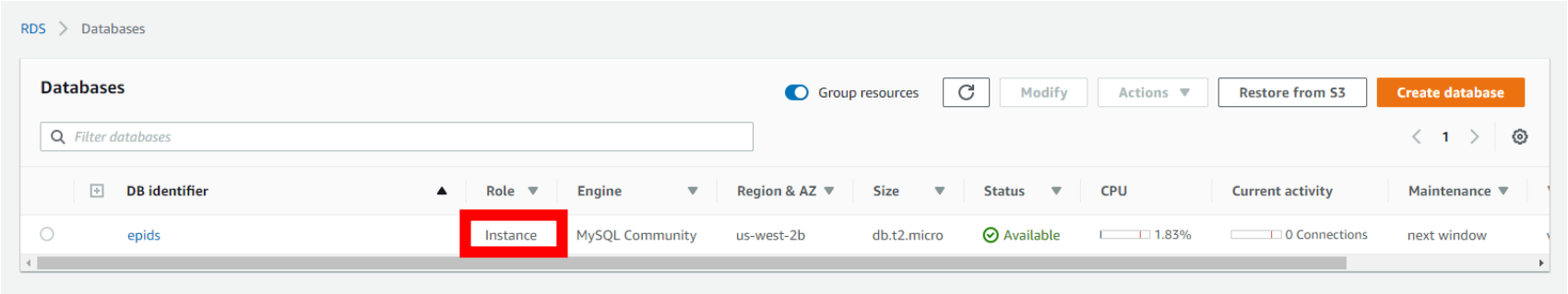
- RDS: **managed relational database service.**
- Provides database engines to choose from: **Amazon Aurora, MySQL, MariaDB, Oracle, Microsoft SQL Server, and PostgreSQL.**
- AWS RDS **handles routine database tasks** such as provisioning, patching, backup, recovery, failure detection, and repair.
- Easy to use **replication** (enhance availability and reliability) for production workloads.
- **Automated backups**, and user-initiated **snapshots** (stored in S3)
- **Multi-AZ deployment** option (high availability)

DB Instances



Amazon RDS

- DB Instances are the **basic building block** of Amazon RDS.
- They are **isolated database environment in the cloud.**
- A DB Instance **can contain multiple user-created databases.**
- You can query those databases by using the same tools and applications that you use with a standalone database instance.



AWS Global Infrastructure - Review

Availability Zones are designed for physical redundancy and provide resilience, enabling uninterrupted performance, even in the event of power outages, Internet downtime, floods, and other natural disasters.

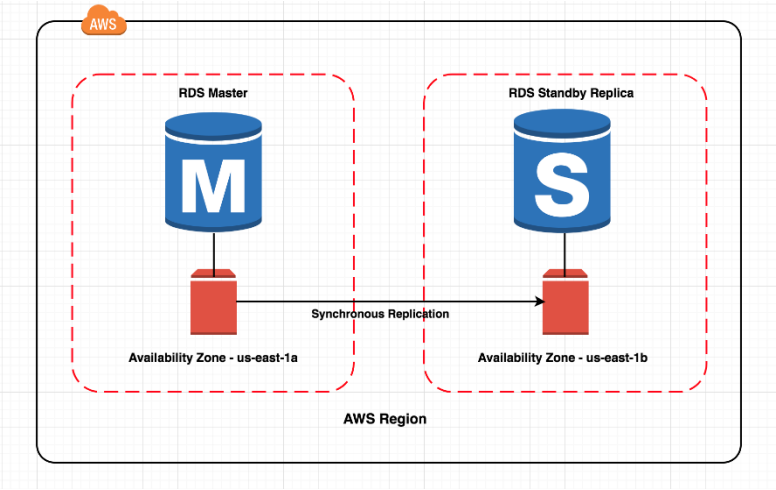
https://aws.amazon.com/about-aws/global-infrastructure/

Cross-Region Snapshots

- Are a **copy of a database snapshot stored in a different AWS Region.**
- Provide a **backup for disaster recovery.**
- Can be **used as a base for migration to a different region.**

Multi-AZ RDS Deployment

- With Multi-AZ operation, your database is **synchronously replicated to another Availability Zone in the same AWS Region**.
- **Fail over to the standby** automatically occurs in case of a master database failure.
- Planned maintenance is applied first to standby databases.



Example AWS RDS

Amazon RDS

Dashboard
Databases
Query Editor
Performance Insights
Snapshots
Automated backups
Reserved instances
Proxies

Subnet groups
Parameter groups
Option groups

Events
Event subscriptions

Recommendations 2
Certificate update 1

Databases

Group resources | Modify | Actions ▼ | Restore from S3 | Create database

Filter databases

1

DB identifier	Role	Engine	Region & AZ	Size	Status	CPU
epids	Instance	MySQL Community	us-west-2b	db.t2.micro	Available	1.6

epids

Modify Actions

Summary

DB identifier	CPU	Info	Class
epids	2.03%	Available	db.t2.micro
Role	**Current activity**	**Engine**	**Region & AZ**
Instance	0 Connections	MySQL Community	us-west-2b

Connectivity & security

Endpoint & port

Endpoint
epids.cprzbsokwcwb.us-west-2.rds.amazonaws.com

Port
3306

Networking

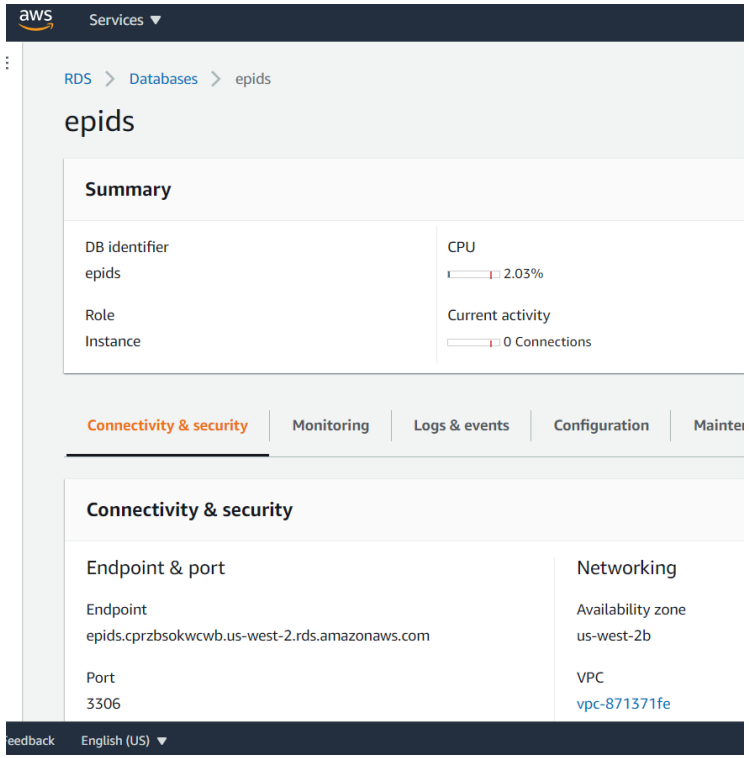
Availability zone
us-west-2b

VPC
vpc-871371fe

Security

VPC security groups
rds-launch-wizard (sg-0c88a6db615cca98f)
(active)

Public accessibility




```python
import pymysql
import pandas as pd

#Connecting to a AWS RDS MySQL database using Python

def connect_db():
    host="XXX.cprzbsokwcwb.us-west-2.rds.amazonaws.com"
    port=3306
    dbname="XXX"
    user="XXX"
    password="XXX"
    conn = pymysql.connect(host, user=user,port=port,
                           passwd=password, db=dbname)
    return conn

def get_newspapers_df(month, conn):
    df = pd.read_sql('select * from NEWSPAPER_ARTICLES where year = 2014 and country_id=101 and month=%(dmonth)s;', params={"dmonth":month},con=conn)
    df = df.drop_duplicates(subset='Tittle', keep="first")
    return df
```

- AWS Concepts Quiz (due Friday at midnight)

- Lab #2: connecting to a EC2 instance
  - Windows users: Windows users: Lab #2 - AWS
  - Mac users: Mac users: Lab #2 - AWS EC2