

## Instructor Notes:

Add instructor notes here.



**Instructor Notes:**

This lesson is to give an Introduction on Java Server Pages

## Lesson Objectives



In this lesson, you will learn:

- Amazon RDS
- Amazon ElastiCache
- Amazon Dynamo DB

Presentation Title | Author | Date

| © 2017 Capgemini. All rights reserved.

2

Amazon RDS  
Amazon ElastiCache  
Amazon Dynamo DB

**Instructor Notes:**

**6.1: Amazon RDS**  
**Amazon Database Services**

AWS offers a broad range of databases services to the user.



The diagram illustrates the scope of Amazon Database Services, divided into two main categories:

- Relational Databases:**
  - Amazon RDS:** Includes Aurora, Commercial, and Community editions.
  - Amazon Redshift:** Includes Data Warehouse.
  - Supported Engines:** MySQL, ORACLE, PostgreSQL, Microsoft SQL Server, and MariaDB.
- Non-Relational Databases:**
  - Amazon DynamoDB:** Key Value.
  - Amazon ElastiCache:** In-Memory Data Store.
  - Amazon Neptune:** Graph.
  - Document:** Includes Redis and Memcached.

At the bottom, the **AWS Database Migration Service** is shown as a separate service.

**amazon web services**

Presentation Title | Author | Date | © 2017 Capgemini. All rights reserved. 3

## AWS Database services are

- Relational databases
- non-Relational databases
- Data warehouse
- In-memory data store
- Graph database

**AWS Database Migration Service**  
makes it easy and cost effective to migrate any one existing databases to AWS

**Instructor Notes:**

5.1: Amazon RDS  
**Amazon Storage Services**


The diagram illustrates three AWS database services:

- Amazon RDS**: Managed **relational** database service. It supports Oracle, PostgreSQL, SQL Server, and MySQL. A DBA icon is shown next to the database logos.
- Amazon DynamoDB**: Managed **NoSQL** database service. It is represented by a blue hexagonal logo and a crossed-out SQL logo.
- Amazon ElastiCache**: In-Memory **Caching** Service. It supports Redis and Memcached, represented by their respective logos.

amazon web services

Presentation Title | Author | Date | © 2017 Capgemini. All rights reserved. 4

**Instructor Notes:**







## 5.1: Amazon RDS Amazon RDS


It is a managed relational database in the cloud which can be launched in minutes with just a few clicks..

---

### What is Amazon RDS?

Amazon RDS is a web service that makes it easy to set up, operate, and scale a relational database in the cloud.

| Compatible with your existing apps.  | Easy to set up, operate, and scale.   |
|--|---|
|  <br>  | <ul style="list-style-type: none"> <li>Ease of deployment and patching</li> <li>Automated backups and disaster recovery</li> <li>Push button scalability</li> <li>Failure detection and automatic recovery</li> <li>Database monitoring and alerts</li> </ul> |



Presentation Title | Author | Date
© 2017 Capgemini. All rights reserved.
5

Amazon RDS - offers a variety of database services.

Runs MySQL, Oracle, or SQL Server database engine on AWS.

Free Usage - YES

750 hours per month of a t1.micro DB instance  
 20 GB of DB storage  
 20 GB of backups  
 10 million I/O operations

- With Amazon RDS ,the code, applications, and tools we already use today with our existing databases can be used with Amazon RDS.
- Amazon RDS automatically patches the database software and backs up your database, storing the backups for a retention period that you define and enabling point-in-time recovery.
- You benefit from the flexibility of being able to scale the compute resources or storage capacity associated with your relational database instance by using a single API call.

In addition, Amazon RDS makes it easy to use replication to enhance availability and reliability for production databases and to **scale** out beyond the capacity of a single database deployment for read-heavy database workloads In addition, Amazon RDS makes it easy to use replication to enhance availability and reliability for production databases and to scale out beyond the capacity of a single database deployment for read-heavy database workloads

**Instructor Notes:**

## 5.1: Amazon RDS Amazon RDS(Relational Database Service)



It is easy to Administer :-

- Amazon RDS makes it easy to go from project conception to deployment. No need for infrastructure provisioning, and no need for installing and maintaining database software.

Highly Scalable :-

- You can scale your database's compute and storage resources with only a few mouse clicks or an API call, often with no downtime.

Available and durable :-

- When you provision a Multi-AZ DB Instance, Amazon RDS synchronously replicates the data to a standby instance in a different Availability Zone (AZ). Amazon RDS has many other features that enhance reliability for critical production databases, including automated backups, database snapshots, and automatic host replacement.



**Instructor Notes:**

## 6.1: Amazon RDS

### Amazon RDS(Continuing...)



Fast

Secure :-

- Amazon RDS also lets you run your database instances in Amazon Virtual Private Cloud(Amazon VPC), which enables you to isolate your database instances and to connect to your existing IT infrastructure through an industry-standard encrypted IPsec VPN.

Inexpensive :-

- You pay very low rates and only for the resources you actually consume



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

7

- With Amazon RDS ,the code, applications, and tools we already use today with our existing databases can be used with Amazon RDS.
- Amazon RDS automatically patches the database software and backs up your database, storing the backups for a retention period that you define and enabling point-in-time recovery.
- You benefit from the flexibility of being able to scale the compute resources or storage capacity associated with your relational database instance by using a single API call.

This means that the code, applications, and tools you already use today with your existing databases can be used with Amazon RDS. Amazon RDS automatically patches the database software and backs up your database, storing the backups for a retention period that you define and enabling point-in-time recovery. You benefit from the flexibility of being able to scale the compute resources or storage capacity associated with your relational database instance by using **Overview of Amazon Web Services** March 2013

a single API call. In addition, Amazon RDS makes it easy to use replication to enhance availability and reliability for production databases and to scale out beyond the capacity of a single database deployment for read-heavy database workloads In addition, Amazon RDS makes it easy to use replication to enhance availability and reliability for production databases and to scale out beyond the capacity of a single database deployment for read-heavy database workloads

**Instructor Notes:**

## 5.1: Amazon RDS Amazon RDS( How to work on )



The Amazon RDS console is a simple web-based user interface.

From the console, you can perform almost all tasks you need to do from the RDS console with no programming required.

To access the Amazon RDS console, sign in to the AWS Management Console and open the Amazon RDS console at

<https://console.aws.amazon.com/rds/>.

This demo shows how to create and connect to a DB instance using Amazon RDS.

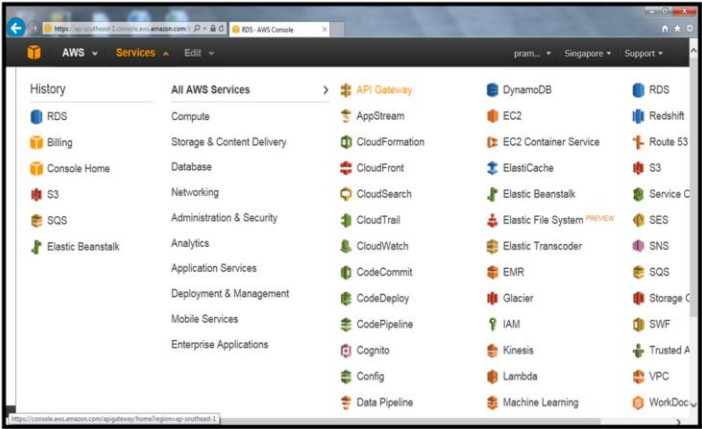
We can create, or launch, a DB instance that uses MySQL, Oracle, PostgreSQL, and Microsoft SQL Server.





Instructor Notes:

6.1: Amazon RDS  
Amazon RDS



**Instructor Notes:**

### 5.1: Amazon RDS Amazon RDS Steps



In this example, we will create a DB instance running the Oracle database 10 GB of storage, and automated backups enabled with a retention period of one day.

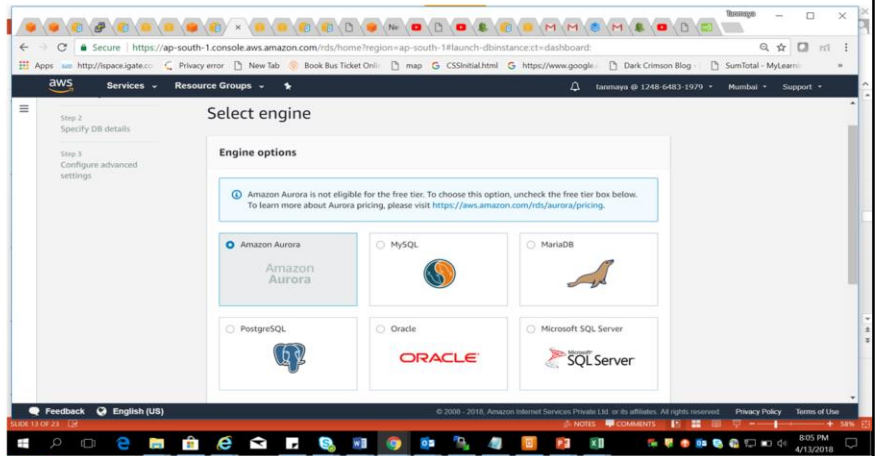
To launch an Oracle DB instance-

1. Sign in to the AWS Management Console and open the Amazon RDS console at <https://console.aws.amazon.com/rds/>.
2. Select the region in which you want to create the DB instance.
3. In the navigation pane, click DB Instances.
4. Click Launch DB Instance to start the Launch DB Instance



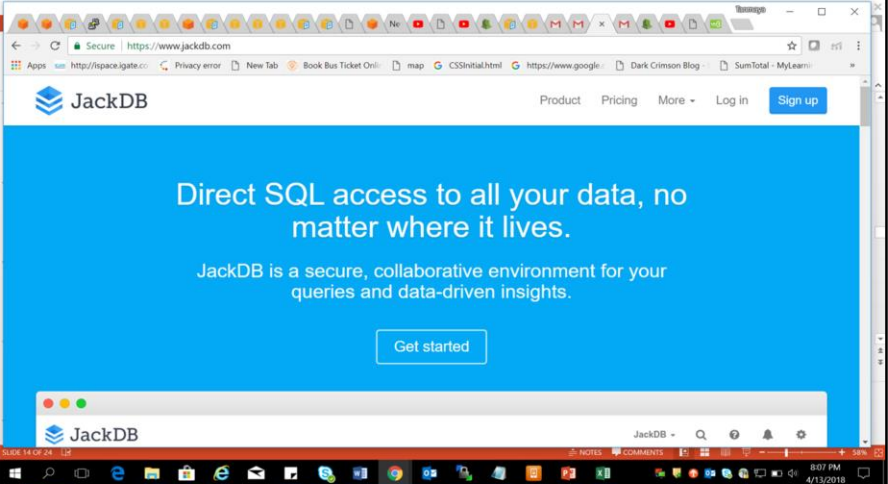
**Instructor Notes:**

## 6.1: Amazon RDS Amazon RDS Steps( Continuing.. )



**Instructor Notes:**

## 5.1: Amazon RDS JackDB



Direct SQL access to all your data, no matter where it lives.

JackDB is a secure, collaborative environment for your queries and data-driven insights.

[Get started](#)

amazon web services

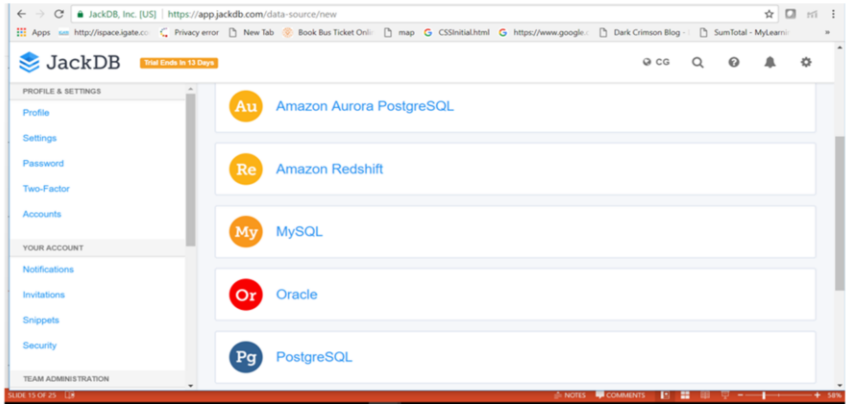
Presentation Title | Author | Date | © 2017 Capgemini. All rights reserved. 12

**JackDB :-**


- A database client - like psql or pgAdmin
- works entirely in web browser
- supports multiple db including PostgreSQL
- Add Audit logging data source sharing
- HTTPS and SSL with remote host verification
- fine grained access control and multi level security policies

**Instructor Notes:**

## 6.1: Amazon RDS JackDB



The screenshot displays the JackDB web application interface. The browser address bar shows the URL <https://appjackdb.com/data-source/new>. The application has a sidebar menu on the left with sections: PROFILE & SETTINGS (containing Profile, Settings, Password, Two-Factor, and Accounts), YOUR ACCOUNT (containing Notifications, Invitations, Snippets, and Security), and TEAM ADMINISTRATION. The main content area lists five database connection options, each with a circular icon and a text label: Amazon Aurora PostgreSQL (Au), Amazon Redshift (Re), MySQL (My), Oracle (Or), and PostgreSQL (Pg). A red banner at the bottom of the interface reads "Trial Ends in 13 Days".

 amazon web services

Presentation Title | Author | Date | © 2017 Capgemini. All rights reserved. 13

**Instructor Notes:****5.1: Amazon RDS****Steps to launch DB instance of MySQL type in AWS RDS**

In Amazon RDS dashboard click on the Launch DB instance link  
 Choose MySQL engine and click next  
 Choose Use case Dev/Test - MySQL  
 supports multiple db including PostgreSQL  
 Add Audit logging data source sharing  
 HTTPS and SSL with remote host verification  
 fine grained access control and multi level security policies



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

14

1. In Amazon RDS dashboard click on the Launch DB instance link
2. Choose MySQL engine and click next
3. Choose Use case Dev/Test – MySQL
4. Specify DB details
  - DB instance class- db.t2.micro ( low space )
  - Create replica in Different Zone
  - Storage type – general purpose
  - Storage – 20 gb
5. Settings
  - DB instance Identifier - LnD-java-mysql
  - User name - java
  - Password - Bangalore
6. Network and security –
  - Let it be default , pls don't change anything
7. Database Options
  - DB name - LnD\_DB\_Mysql
  - Port – 3306
8. Click on DB launch instance
  - Once the instance is available , copy few things
  - Endpoint :- lnd-java-mysql.cryxduifehe.ap-south-1.rds.amazonaws.com
  - Db name :- LnD\_DB\_Mysql
  - Userid :- java
  - password
 check the security group -- Type (Any traffic ) and source – (Anywhere)

**Instructor Notes:**

### 6.1: Amazon RDS Steps to Implement Query in jackDB

Type `www.jackDb.comLogin` to  
Create a account and signIn  
Add a Datasource of MySQL type  
Enter DB credentials  
Add Audit logging data source sharing  
HTTPS and SSL with remote host verification  
fine grained access control and multi level security policies



Presentation Title | Author | Date

© 2017 Caggemini. All rights reserved.

15

1. Type `www.jackDb.comLogin` to
2. Create a account and signIn
3. Add a Datasource of MySQL type
4. Enter DB credentials
  - Name - LnD-Javalot-Jackdb-mysql
  - Host :- Endpoint name of RDS Db instance
  - Port :- 3306
  - User – java
  - Password – DB password from AWS RDS
- Once Datasource created , connect it.

**Instructor Notes:**

### 5.1: Amazon RDS Demo



Demo on:

- Amazon RDS with JackDB



Presentation Title | Author | Date | © 2017 Capgemini. All rights reserved.

16

MySQL query:

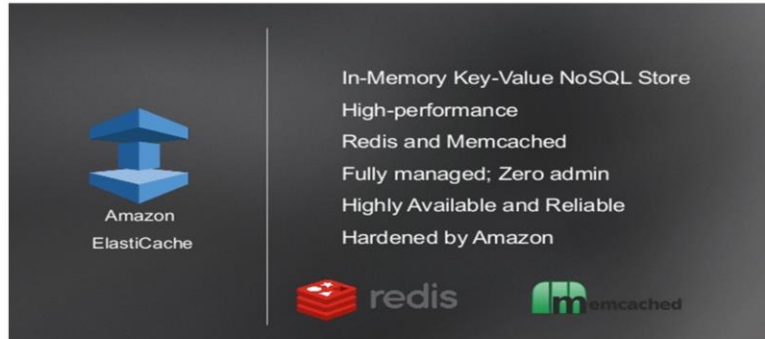
```
CREATE DATABASE mydb; USE mydb; CREATE TABLE mytable ( id INT  
PRIMARY KEY, name VARCHAR(20) ); INSERT INTO mytable VALUES ( 1,  
'Will' ); INSERT INTO mytable VALUES ( 2, 'Marry' ); INSERT INTO mytable  
VALUES ( 3, 'Dean' ); SELECT id, name FROM mytable WHERE id = 1;  
UPDATE mytable SET name = 'Willy' WHERE id = 1; SELECT id, name FROM  
mytable; DELETE FROM mytable WHERE id = 1; SELECT id, name FROM  
mytable; DROP DATABASE mydb;
```



**Instructor Notes:**

## 6.2: Amazon ElastiCache

- Amazon ElastiCache makes it easy to deploy, operate, and scale an in-memory data store or cache in the cloud .



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

17

- This service improves the performance of web applications by allowing you to retrieve information from a fast, managed, in-memory caching system, instead of relying entirely on slower disk-based databases .
- ElastiCache supports two open-source caching engines.

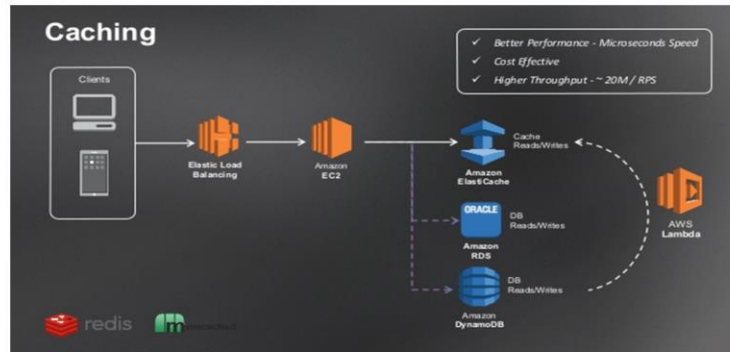
Memcached - a widely adopted memory object caching system . ElastiCache is protocol compliant with Memcached, so popular tools that you use today with existing Memcached environments will work seamlessly with the service.

Redis --- It is a popular open-source in-memory key-value store that supports data structures such as sorted sets and lists. ElastiCache supports Redis master / slave replication which can be used to achieve cross AZ redundancy

**Instructor Notes:**

## 5.2: Amazon ElastiCache

### Amazon ElastiCache



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

18

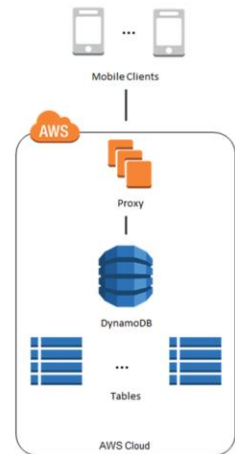
1. Amazon ElastiCache Redis Multi-AZ with Automatic Failover Open-Source Compatible Fully Managed Enhanced Redis Engine Easy to Deploy, Use and Monitor No Cross-AZ Data Transfer Costs Extreme Performance at Cloud Scale ElastiCache - Customer Value

**Instructor Notes:**

### 5.3: Amazon DynamoDB

#### Amazon DynamoDB

- It is a fast, fully managed NoSQL database service which makes it simple and cost-effective to store and retrieve any amount of data, and serve any level of request traffic .
- It is a fully managed cloud database and supports both document and key-value store models.
- It is flexible data model and reliable performance make it a great fit for mobile, web, gaming application.



**Instructor Notes:**

### 6.3: Amazon DynamoDB

#### Amazon DynamoDB



- It is a fast and flexible NoSQL database for any scale .
- It helps the developer to don't have to worry about hardware provisioning, setup and configuration, replication, software patching, or cluster scaling.
- DynamoDB is also provide secure way through encryption at rest, that removes the the operational burden and complexity involved in protecting sensitive data.
- Amazon DynamoDB provides on-demand backup capability.
- DynamoDB allows you to delete expired items from tables automatically to help to reduce storage usage and the cost of storing data that is no longer relevant .



Amazon DynamoDB

Run your business, not your database



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

20

With DynamoDB, you can create database tables that can store and retrieve any amount of data, and serve any level of request traffic. You can scale up or scale down your tables' throughput capacity without downtime or performance degradation, and use the AWS Management Console to monitor resource utilization and performance metrics.

**Instructor Notes:**

### 5.3: Amazon DynamoDB

#### Amazon DynamoDB



- DynamoDB automatically spreads the data and traffic for your tables over a sufficient number of servers to handle your throughput and storage requirements, while maintaining consistent and fast performance.

- These are the benefits of DynamoDB

- Highly Scalable
- Fast Consistence Performance
- Fully managed
- Business critical reliability

Amazon DynamoDB

Run your business, not your database



Presentation Title | Author | Date

© 2017 Capgemini. All rights reserved.

21

All of your data is stored on solid state disks (SSDs) and automatically replicated across multiple Availability Zones in an AWS region, providing built-in high availability and data durability. You can use global tables to keep DynamoDB tables in sync across AWS Regions.

**Instructor Notes:**

## Summary



In this lesson, you have learnt:

- Amazon RDS
- Amazon ElastiCache
- Amazon DynamoDB

**Instructor Notes:****Answers for the Review Questions:**

**Answer 1:** Amazon Relational and Non-Relational

**Answer 2:** Amazon RDS

**Answer 3:** Amazon ElastiCache

**Review – Questions**

Question 1: Amazon database services support both \_\_\_\_\_ and \_\_\_\_\_ databases.

Question 2 : \_\_\_\_\_ AWS Database service supports Relational database to migrate to AWS ?

Question 3 : \_\_\_\_\_ makes it easy to deploy, operate, and scale an in-memory data store or cache in the cloud .

**Instructor Notes:****Answers for the  
Review Questions:**

**Answer 3** AWS  
DynamoDb

**Answer 4:** Option 2  
and Option4

## Review – Questions



Question 3: \_\_\_\_\_ is a fully managed cloud database and supports both document and key-value store models.

- Question 4: Which are the AWS Database storage ?
  - Option 1 : Amazon EBS
  - Option 2 : Amazon DynamoDb
  - Option 3 : Amazon Glacier
  - Option 4 : Amazon RDS