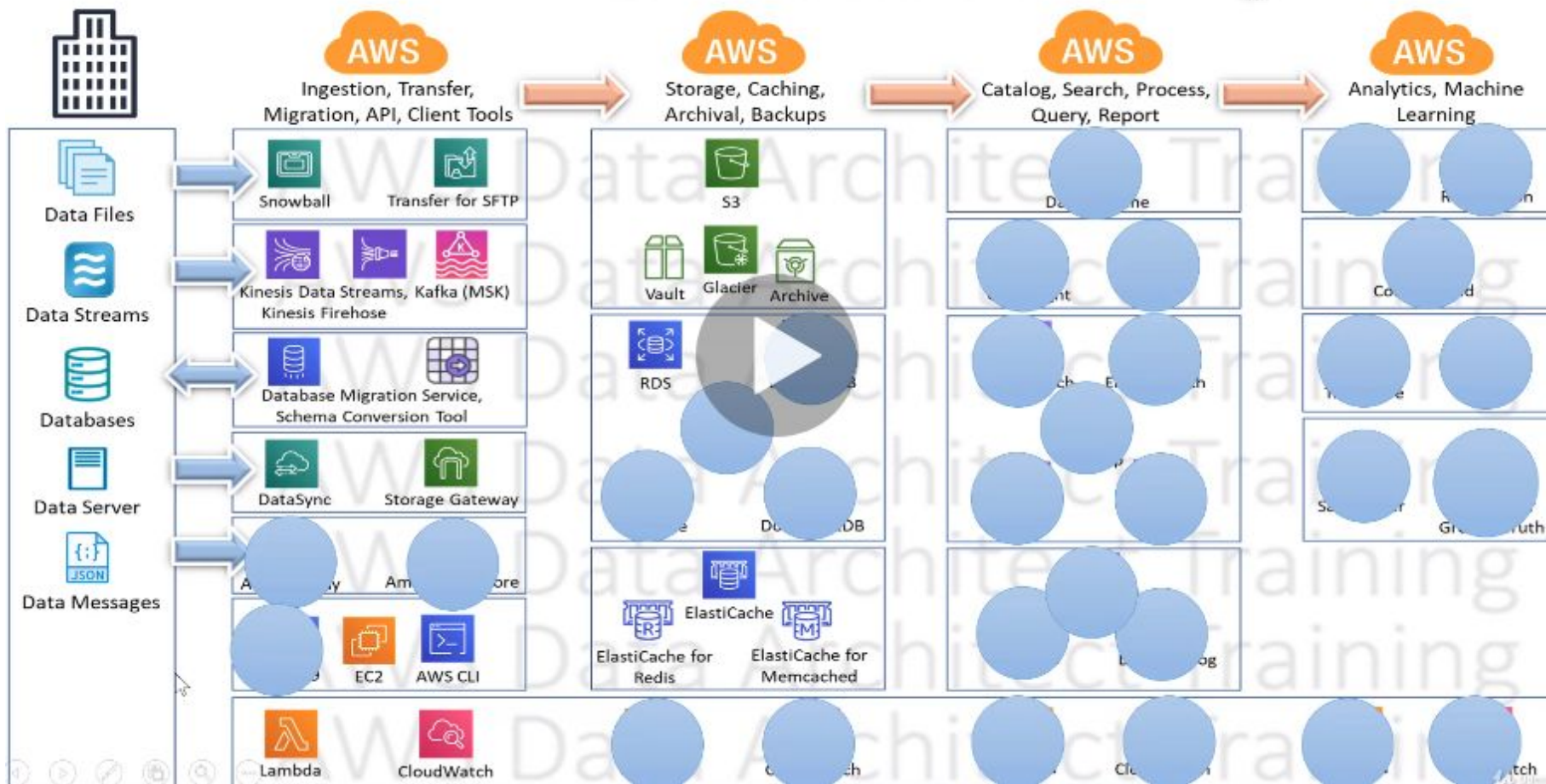




sec_10_RDS_basics

AWS Data Architect Training





Relational

Relational databases store data with pre-defined schema and relationships between them, designed for supporting ACID transactions, maintaining referential integrity, and data consistency.

Used for: Traditional applications, ERP, CRM, and e-commerce.

AWS Offerings

- **Amazon Aurora**
MySQL, PostgreSQL
- **Amazon RDS**
MySQL, PostgreSQL, MariaDB, Oracle, SQL Server
- **Amazon Redshift**



Key-value

Key-value databases are optimized to store and retrieve key-value pairs in large volumes and in milliseconds, without the performance overhead and scale limitations of relational databases.

Used for: Internet-scale applications, real-time bidding, shopping carts, and customer preferences.

AWS Offering

- **Amazon DynamoDB**



Document

Document databases are designed to store semi-structured data as documents and are intuitive for developers to use because the data is typically represented as a readable document.

Used for: Content management, personalization, and mobile applications.

AWS Offering

- **Amazon DocumentDB (with MongoDB compatibility)**



In-memory

In-memory databases are used for applications that require real time access to data. By storing data directly in memory, these databases provide microsecond latency where millisecond latency is not enough.

Used for: Caching, gaming leaderboards, and real-time analytics.

AWS Offerings:

- [Amazon ElastiCache for Redis](#)
- [Amazon ElastiCache for Memcached](#)



Graph

Graph databases are used for applications that need to enable millions of users to query and navigate relationships between highly connected, graph datasets with millisecond latency.

Used for: Fraud detection, social networking, and recommendation engines

AWS Offering:

- [Amazon Neptune](#)



Time Series

Time series databases are used to efficiently collect, synthesize, and derive insights from enormous amounts of data that changes over time (known as time-series data).

Used for: IoT applications, DevOps, and industrial telemetry.

AWS Offering:

- [Amazon Timestream](#)



Ledger

Ledger databases are used when you need a centralized, trusted authority to maintain a scalable, complete and cryptographically verifiable record of transactions.

Used for: Systems of record, supply chain, registrations, and banking transactions.

AWS Offering:

- [Amazon Quantum Ledger Database \(QLDB\)](#)

Use-Case: Hosting Database on Cloud

Maintained by User

Maintained by AWS

Database on-premise

App Optimization

Scaling

High Availability

Database Backups

DB Software Patches

DB Software Installs

OS Patches

OS Installation

Server Maintenance

Rack & Stack

Power, HVAC, Network

Database on EC2

App Optimization

Scaling

High Availability

Database Backups

DB Software Patches

DB Software Installs

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OS Installation

Server Maintenance

Rack & Stack

Power, HVAC, Network

Database on RDS

App Optimization

Scaling

High Availability

Database Backups

DB Software Patches

DB Software Installs

OS Patches

OS Installation

Server Maintenance

Rack & Stack

Power, HVAC, Network

Amazon RDS

Managed relational database service with a choice of popular database engines

Amazon
Aurora

MySQL

PostgreSQL



MariaDB

Microsoft SQL Server

ORACLE



Easy to administer

No need to provision infrastructure, install, and maintain DB software



Available & durable

Automatic Multi-AZ data replication; automated backup, snapshots, and failover



Highly scalable

Scale DB compute and storage with a few clicks; minimal downtime for your application



Fast & secure

SSD storage and guaranteed provisioned I/O; data encryption at rest and in transit

AWS RDS - Basic

#	Engine	Coverage
1	RDS Theory	<ul style="list-style-type: none">• RDS Key features• RDS Basic FAQs
2	Maria DB	<ul style="list-style-type: none">• Create and Configure Database Instance• Query database instance with HeidiSQL• Create / Share / Copy / Restore Snapshots• Stop / Reboot / Point-in-time Restore of Database Instance• Delete Database Instance
3	PostgreSQL	<ul style="list-style-type: none">• Create and Configure Database Instance• Query database instance with pgAdmin• Create Read Replica• Promote Read Replica• Delete Database Instance
4	Oracle	<ul style="list-style-type: none">• Create and Configure Database Instance• Query database instance with Oracle SQL Developer• Delete Database Instance

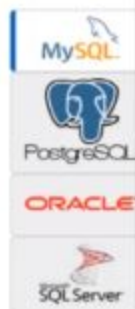
AWS RDS - Advanced

#	Engine	Features
5	SQL Server	<ul style="list-style-type: none"> Create and Configure Database Instance Query database instance with SQL Server Management Studio Walkthrough of Server Properties Configure Database Instance & Restore on-premise native backup to SQL Server database instance on RDS Export SQL Server instance on RDS into a native backup format to restore cloud data to on-premise Delete Database Instance
6	MySQL	<ul style="list-style-type: none"> Create and Configure Database Instance Query database instance with MySQL Workbench Performance Insights Walkthrough Create Read Replica and Multi-AZ vs Read Replica Testing Replication from Primary to Read Replica Create Aurora Read Replica from MySQL Primary Database Instance Delete Database Instance
7	Aurora	<ul style="list-style-type: none"> Create and Configure MySQL compatible Aurora Database Instance Cluster storage architecture and endpoints Query database instance with MySQL Workbench Walkthrough of server properties Fail-over database cluster Setup cross-region replication for global database access Delete database instance
8	Aurora Serverless	<ul style="list-style-type: none"> Create Serverless Aurora Database Instance Setup Cloud 9 IDE on AWS Query Aurora Serverless Instance with Cloud 9 Delete Cloud 9 IDE and Aurora Serverless Database Instance
9	Aurora Global DB	<ul style="list-style-type: none"> Create a Global Aurora Database Cluster Add a new database region to Global database cluster Remove database instance from Global database cluster

Rapid deployment via Web Console

Select Engine

To get started, choose the DB Engine that you want to use.



Instance Specifications

DB Engine

License Model

DB Engine Version



Configure Advanced Settings

Network & Security

This instance will be created with the new certificate. If you are using SSL to connect to the instance, you must update the new certificate. [Learn more here.](#)

VPC

Availability Zone

DB Security Group(s)

Settings

DB Instance Class

Database Options

Database Name

Master Password*

Confirm Password*

Database Options

Database Name

Note: If no database name is specified then an initial MySQL database will be created on the DB instance.

Backup

DB Parameter Group

Enable

Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to detail [here](#).

Backup Retention Period days

Backup Window

Start Time : UTC

Duration hours

Maintenance

Auto Minor Version Upgrade

Maintenance Window

Start Day

Start Time : UTC

Duration hours

Select the period in which you want pending modifications (such as changing the DB instance class) or patches applied to the DB instance by Amazon RDS. Any such maintenance should be started and completed within the selected period. If you do not select a period, Amazon RDS will assign a period randomly. [Learn More.](#)

Backup

Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to detail [here](#).

Backup Retention Period

Backup Window

Maintenance

Auto Minor Version Upgrade

Cancel

Previous

Launch DB Instance

How secure is this?

- ✓ RDS is compliant with PCI, SOC1/SOC2/SOC3, ITAR, ISO27001
- ✓ Amazon RDS encryption uses AWS Key Management Service (KMS) to let you create and manage the keys used to encrypt your data
- ✓ Every database has an associated firewall that blocks all traffic by default. You open up specific IP addresses
- ✓ Deploy to a “Virtual Private Cloud” to completely isolate the database and use VPN to connect to your corporate network

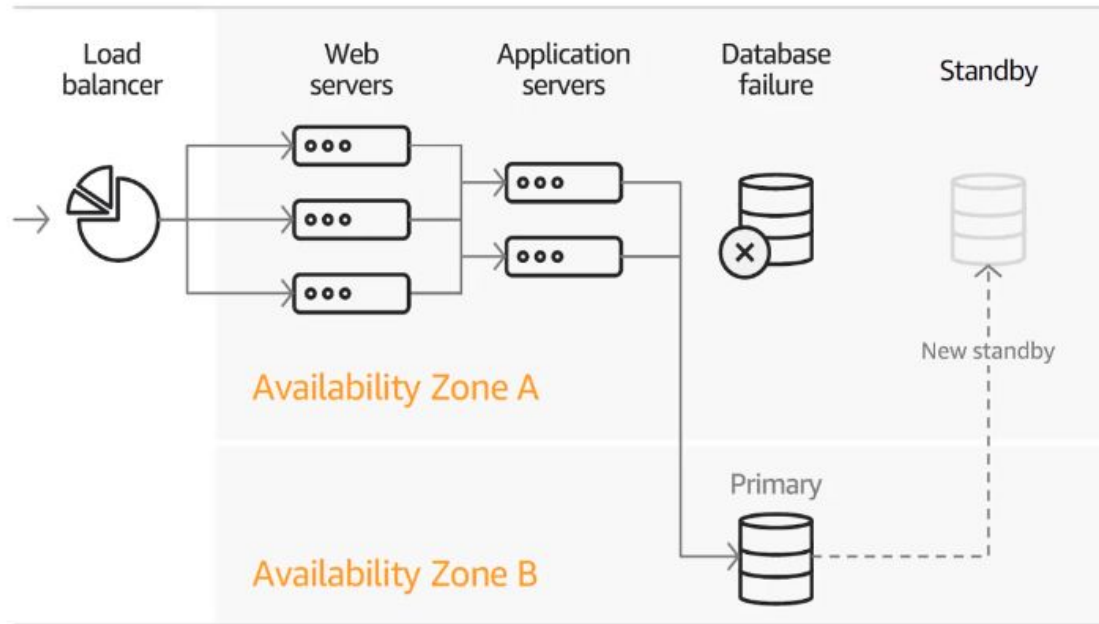
Our databases are very large, need very high performance

- ✓ Allocate up to 3 TB with MySQL, Postgres, Oracle [1 TB for MS SQL]
- ✓ Up to 30,000 IOPS for MySQL, Postgres, Oracle [10,000 for MS SQL]

High Availability Multi-AZ Deployments

Enterprise-grade fault tolerance solution for production databases

- ✓ Automatic failover
- ✓ Synchronous replication
- ✓ Inexpensive and enabled with one click



Read Replicas

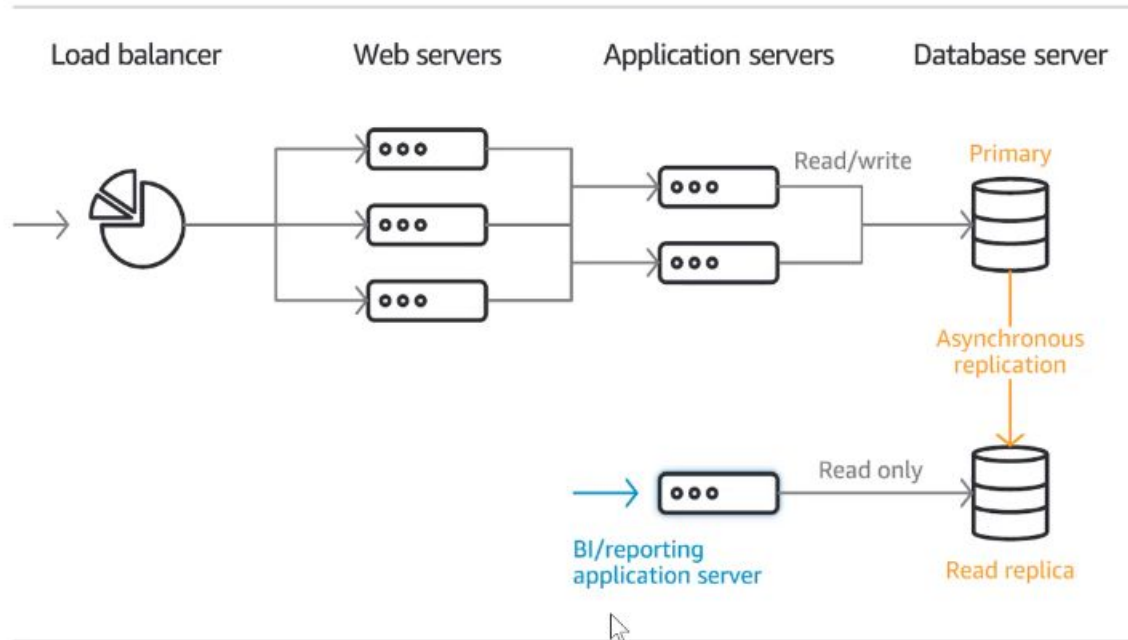
Performance and disaster recovery

Relieve pressure on your master node with additional read capacity

Bring data close to your applications in different regions

Promote a read replica to a master for faster recovery in the event of disaster

Supported for Amazon Aurora & Amazon RDS for MySQL, MariaDB, PostgreSQL



Choose cross-region read replicas for enhanced data locality, even more ease of migration

- Even faster recovery in the event of disaster
- Bring data close to your customers
- Promote to a master for easy migration



How RDS backups work

- Automated backups
 - Restore your database to a point in time
 - Enabled by default
 - Choose a retention period, up to 35 days
- Manual snapshots
 - Initiated by you
 - Persist until you delete them
 - Stored in Amazon Simple Storage Service (Amazon S3)
 - Build a new database instance from a snapshot when needed

Automated Backups

Amazon RDS for MySQL, PostgreSQL, MariaDB, Oracle, and SQL Server

- ✓ Scheduled daily volume backup of entire instance
- ✓ Archive database change logs
- ✓ 35-day maximum retention
- ✓ Minimal impact on database performance
- ✓ Taken from standby when running Multi-AZ

Amazon Aurora

- ✓ Automatic, continuous, incremental backups
- ✓ No impact on database performance
- ✓ 35-day maximum retention

Availability and Durability	
DB Instance Status	available
Multi AZ	Yes
Automated Backups	Enabled (7 Days)
Latest Restore Time	October 12, 2016 at 4:50:00 PM UTC-7



Every day during your backup window, Amazon RDS creates a storage volume snapshot of your database



Every five minutes, Amazon RDS backs up the transaction logs of your database

Database Snapshots

Always incremental

Amazon S3 →
99.9999999999%
durability

Inherit encryption

Copy across accounts,
across regions

Amazon EBS



Volume

Amazon S3/Aurora Storage



Bucket



Snapshot 1



Snapshot 2



Snapshot 3



Security and Compliance

Network isolation via Virtual Private Cloud (VPC)

Security groups

AWS IAM-based resource-level role permission controls

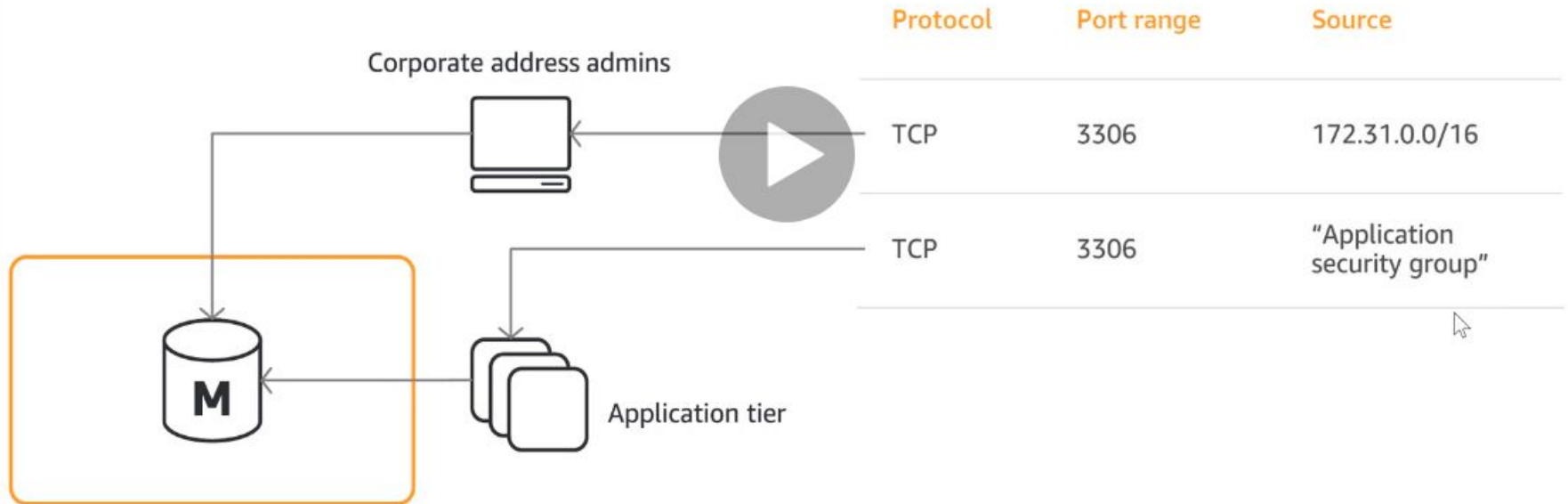
Encryption at rest using AWS KMS or Oracle/Microsoft TDE

SSL protection for data in transit



Security Groups

Specify network access rules for your database



Identity and Access Management (IAM)

Governed access:
use IAM to control
who can perform
actions with
Aurora MySQL
and Amazon RDS for
MySQL



RDS



```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "AllowCreateDBInstanceOnly",
      "Effect": "Allow",
      "Action": [
        "rds:CreateDBInstance"
      ],
      "Resource": [
        "arn:aws:rds:*:123456789012:db:test*",
        "arn:aws:rds:*:123456789012:cg:default*",
        "arn:aws:rds:*:123456789012:pg:default*",
        "arn:aws:rds:*:123456789012:subgrp:default"
      ],
      "Condition": {
        "StringEquals": {
          "rds:DatabaseEngine": "mysql",
          "rds:DatabaseClass": "db.t2.micro"
        }
      }
    }
  ]
}
```

At Rest Encryption for All Amazon RDS Engines

AWS Key Management Service (AWS KMS)

Two-tiered key hierarchy using envelope encryption

Unique data key encrypts customer data

AWS KMS master keys encrypt data keys

Available for all Amazon RDS engines

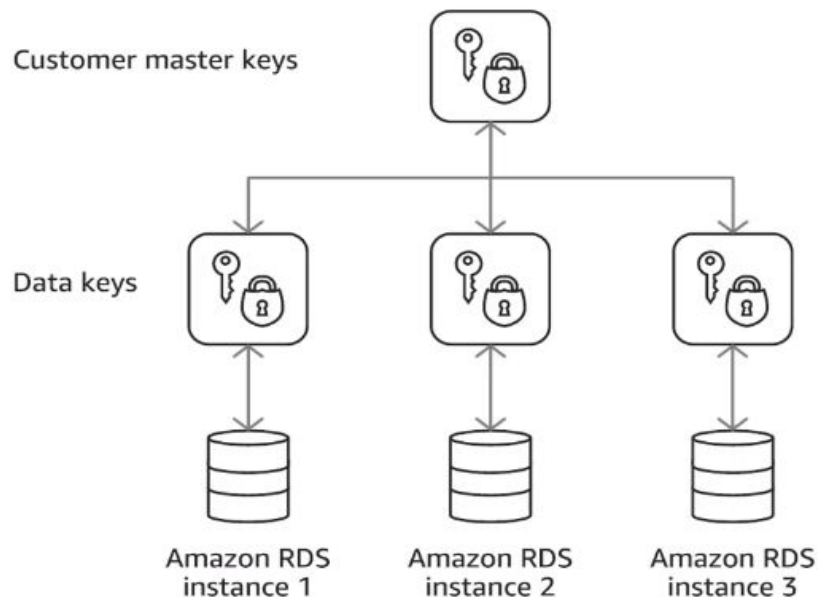
Benefits

Limits risk of compromised data key

Better performance for encrypting large data

Easier to manage small number of master keys than millions of data keys

Centralized access and audit of key activity



Database Server Instance Size

Instance Type	vCPU	Memory (GiB)	EBS-Optimized Bandwidth (Mbps)	Network Performance
Memory Optimized - Latest Generation				
db.r5.large	2	16	Up to 3,500	Up to 10 Gbps
db.r5.xlarge	4	32	Up to 3,500	Up to 10 Gbps
db.r5.2xlarge	8	64	Up to 3,500	Up to 10 Gbps
db.r5.4xlarge	16	128	3,500	Up to 10 Gbps
db.r5.12xlarge	48	384	7,000	10 Gbps
db.r5.24xlarge	96	768	14,000	25 Gbps
db.x1e.xlarge	4	122	500	Up to 10 Gbps
db.x1e.2xlarge	8	244	1,000	Up to 10 Gbps
db.x1e.4xlarge	16	488	1,750	Up to 10 Gbps
db.x1e.8xlarge	32	976	3,500	Up to 10 Gbps
db.x1e.16xlarge	64	1,952	7,000	10 Gbps
db.x1e.32xlarge	128	3,904	14,000	25 Gbps
db.x1.16xlarge	64	976	7,000	10 Gbps
db.x1.32xlarge	128	1,952	14,000	25 Gbps
Memory Optimized - Current Generation				
db.r4.large	2	15.25	425	Up to 10 Gbps
db.r4.xlarge	4	30.5	850	Up to 10 Gbps
db.r4.2xlarge	8	61	1,700	Up to 10 Gbps
db.r4.4xlarge	16	122	3,500	Up to 10 Gbps
db.r4.8xlarge	32	244	7,000	10 Gbps
db.r4.16xlarge	64	488	14,000	25 Gbps

Instance Type	vCPU	Memory (GiB)	EBS-Optimized Bandwidth (Mbps)	Network Performance
Burstable Performance - Current Generation				
db.t2.micro	1	1	-	Low
db.t2.small	1	2	-	Low
db.t2.medium	2	4	-	Moderate
db.t2.large	2	8	-	Moderate
db.t2.xlarge	4	16	-	High
db.t2.2xlarge	8	32	-	High
General Purpose - Latest Generation				
db.m5.large	2	8	Up to 3,500	Up to 10 Gbps
db.m5.xlarge	4	16	Up to 3,500	Up to 10 Gbps
db.m5.2xlarge	8	32	Up to 3,500	Up to 10 Gbps
db.m5.4xlarge	16	64	3,500	Up to 10 Gbps
db.m5.12xlarge	48	192	7,000	10 Gbps
db.m5.24xlarge	96	384	14,000	25 Gbps
General Purpose - Current Generation				
db.m4.large	2	8	450	Moderate
db.m4.xlarge	4	16	750	High
db.m4.2xlarge	8	32	1,000	High
db.m4.4xlarge	16	64	2,000	High
db.m4.10xlarge	40	160	4,000	10 Gbps
db.m4.16xlarge	64	256	10,000	25 Gbps

How RDS billing works



=



*db.m3.xlarge; MySQL;
Oregon; Single-AZ;
On-Demand*

+



*100 GB
Provisioned IOPS*

+



Provisioned 1,000 IOPS

= 720 hrs * \$0.370 + 100 GB * \$0.125 + 1,000 IOPS * \$0.10

= \$383.34

Get Started with AWS: [Learn more about our Free Tier](#) or [Sign Up for an AWS Account »](#)

☒ FREE USAGE TIER: New Customers get free usage tier for first 12 months

Reset All

Services

Estimate of your Monthly Bill (\$ 0.00)

Choose region: US East (N. Virginia)

Inbound Data Transfer is Free and Outbound Data

Amazon EC2

Amazon S3

Amazon Route
53

Amazon
CloudFront

Amazon RDS

Amazon Elastic
Load Balancing

Amazon
DynamoDB

Amazon
ElastiCache

Amazon
CloudWatch

Amazon SES

Amazon SNS

Amazon Elastic
Transcoder

Amazon
WorkSpaces

Amazon
WorkDocs


AWS Directory
Service

Amazon
Redshift


Amazon
Glacier

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


Amazon RDS On-Demand DB Instances:

Description	DB Instances	Usage	DB Engine and License	Class and Deployment	Storage	I/O	Backtrack
	Add New Row						


Amazon RDS Aurora Serverless:

Description	Usage	DB Engine	Number of Aurora Capacity Unit(ACU)	Storage	I/O
	Add New Row				

Additional Backup Storage (Free backup storage up to 100% of provisioned Storage):

	Backup Type	Backup Storage
	Add New Row	

Amazon RDS Reserved DB Instances:

Description	DB Instances	DB Engine and License	Class and Deployment	Offering and Term	Storage	I/O	Backtrack
	Add New Row						

Data Transfer:

Inter-Region Data Transfer Out:	0	GB/Month ▼
Data Transfer Out:	0	GB/Month ▼
Data Transfer In:	0	GB/Month ▼
Intra-Region Data Transfer:	0	GB/Month ▼

Get Started with AWS: [Learn more about our Free Tier](#) or [Sign Up for an AWS Account »](#)

☒ **FREE USAGE TIER:** New Customers get free usage tier for first 12 months

Reset All

Services

Estimate of your Monthly Bill (\$ 696.03)

Amazon EC2

Amazon S3

Amazon Route
53

Amazon
CloudFront

Amazon RDS

Amazon Elastic
Load Balancing

Amazon
DynamoDB

Amazon
ElastiCache

Amazon
CloudWatch

Amazon SES

Amazon SNS

Amazon Elastic
Transcoder

Amazon
WorkSpaces

Amazon

Estimate of Your Monthly Bill

☒ Show First Month's Bill (include all one-time fees, if any)

Below you will see an estimate of your monthly bill. Expand each line item to see cost breakout of each service. To save this bill and input values, click on 'Save and Share' button. To remove the service from the estimate, jump back to the service and clear the specific service's form.

Export to CSV

Save and Share

<input type="checkbox"/>	Amazon RDS Service (US East (N. Virginia))			\$	696.08
	DB instances:		\$	691.74	
	Storage:		\$	2.30	
	Backups:		\$	0.84	
	Intra-Region Data Transfer:		\$	0.40	
	Inter-Region Data Transfer Out		\$	0.80	
<input type="checkbox"/>	AWS Data Transfer In				\$ 0.00
	US East (N. Virginia) Region:		\$	0.00	
<input type="checkbox"/>	AWS Data Transfer Out				\$ 3.51
	US East (N. Virginia) Region:		\$	3.51	
<input type="checkbox"/>	AWS Support (Basic)				\$ 0.00
	Support for all AWS services:		\$	0.00	
	Free Tier Discount:			\$	-3.56
	Total Monthly Payment:			\$	696.03

**Common
Customer
Samples**

Free Website on
AWS

AWS Elastic
Beanstalk Default

Marketing Web
Site

Large Web
Application (All
On-Demand)

Media Applicator

European Web
Application

Disaster Recover
and Backup

Q: Which relational database engines does Amazon RDS support?



Amazon RDS supports Amazon Aurora, MySQL, MariaDB, Oracle, SQL Server, and PostgreSQL database engines.

Q: How many databases or schemas can I run within a DB instance?

- RDS for Amazon Aurora: No limit imposed by software
- RDS for MySQL: No limit imposed by software
- RDS for MariaDB: No limit imposed by software
- RDS for Oracle: 1 database per instance; no limit on number of schemas per database imposed by software
- RDS for SQL Server: 30 databases per instance
- RDS for PostgreSQL: No limit imposed by software

Q: Can I test my DB instance with a new version before upgrading?

Yes. You can do so by creating a DB snapshot of your existing DB instance, restoring from the DB snapshot to create a new DB instance, and then initiating a version upgrade for the new DB instance. You can then experiment safely on the upgraded copy of your DB instance before deciding whether or not to upgrade your original DB instance.

Q: How will I be charged and billed for my use of Amazon RDS?

You pay only for what you use, and there are no minimum or setup fees. You are billed based on:

- DB instance hours – Based on the class (e.g. db.t2.micro, db.m4.large) of the DB instance consumed. Partial DB instance hours consumed are billed as full hours.
- Storage (per GB per month) – Storage capacity you have provisioned to your DB instance. If you scale your provisioned storage capacity within the month, your bill will be pro-rated.
- I/O requests per month – Total number of storage I/O requests you have (*for Amazon RDS Magnetic Storage and Amazon Aurora only*)
- Provisioned IOPS per month – Provisioned IOPS rate, regardless of IOPS consumed (*for Amazon RDS Provisioned IOPS (SSD) Storage only*)
- Backup Storage – Backup storage is the storage associated with your automated database backups and any customer-initiated database snapshots. Increasing your backup retention period or taking additional database snapshots increases the backup storage consumed by your database.
- Data transfer – Internet data transfer in and out of your DB instance.

Q: How do I import data into an Amazon RDS DB instance?



There are a number of simple ways to import data into Amazon RDS, such as with the `mysqldump` or `mysqlimport` utilities for MySQL; Data Pump, import/export or SQL Loader for Oracle; Import/Export wizard, full backup files (.bak files) or Bulk Copy Program (BCP) for SQL Server; or `pg_dump` for PostgreSQL. For more information on data import and export, please refer to the [Data Import Guide for MySQL](#) or the [Data Import Guide for Oracle](#) or the [Data Import Guide for SQL Server](#) or the [Data Import Guide for PostgreSQL](#).

Q: What defines billable Amazon RDS instance hours?

DB instance hours are billed for each hour your DB instance is running in an available state. If you no longer wish to be charged for your DB instance, you must stop or delete it to avoid being billed for additional instance hours. Partial DB instance hours consumed are billed as full hours.

Q: How will I be billed for a stopped DB instance?

While your database instance is stopped, you are charged for provisioned storage (including Provisioned IOPS) and backup storage (including manual snapshots and automated backups within your specified retention window), but not for DB instance hours.

Q: What is a reserved instance (RI)?



Amazon RDS reserved instances give you the option to reserve a DB instance for a one or three year term and in turn receive a significant discount compared to the on-demand instance pricing for the DB instance. There are three RI payment options -- No Upfront, Partial Upfront, All Upfront -- which enable you to balance the amount you pay upfront with your effective hourly price.

Q: Do reserved instances include a capacity reservation?

Amazon RDS reserved instances are purchased for a Region rather than for a specific Availability Zone. As RIs are not specific to an Availability Zone, they are not capacity reservations. This means that even if capacity is limited in one Availability Zone, reservations can still be purchased in the Region and the discount will apply to matching usage in any Availability Zone within that Region.

Q: Will my DB instance remain available during scaling?

The storage capacity allocated to your DB Instance can be increased while maintaining DB Instance availability. However, when you decide to scale the compute resources available to your DB instance up or down, your database will be temporarily unavailable while the DB instance class is modified. This period of unavailability typically lasts only a few minutes, and will occur during the maintenance window for your DB Instance, unless you specify that the modification should be applied immediately.

Q: What is Amazon RDS General Purpose (SSD) storage?



Amazon RDS General Purpose (SSD) Storage is suitable for a broad range of database workloads that have moderate I/O requirements. With the baseline of 3 IOPS/GB and ability to burst up to 3,000 IOPS, this storage option provides predictable performance to meet the needs of most applications.

Q: What is Amazon RDS Provisioned IOPS (SSD) storage?

Amazon RDS Provisioned IOPS (SSD) Storage is an SSD-backed storage option designed to deliver fast, predictable, and consistent I/O performance. With Amazon RDS Provisioned IOPS (SSD) Storage, you specify an IOPS rate when creating a DB instance, and Amazon RDS provisions that IOPS rate for the lifetime of the DB instance. Amazon RDS Provisioned IOPS (SSD) Storage is optimized for I/O-intensive, transactional (OLTP) database workloads. For more details, please see the [Amazon RDS User Guide](#).

Q: What happens to my backups and DB snapshots if I delete my DB instance?

When you delete a DB instance, you can create a final DB snapshot upon deletion; if you do, you can use this DB snapshot to restore the deleted DB instance at a later date. Amazon RDS retains this final user-created DB snapshot along with all other manually created DB snapshots after the DB instance is deleted. Refer to the [pricing page](#) for details of backup storage costs.

Automated backups are deleted when the DB instance is deleted. Only manually created DB Snapshots are retained after the DB Instance is deleted.

Q: Can I encrypt connections between my application and my DB Instance using SSL?



Yes, this option is currently supported for the MySQL, MariaDB, SQL Server, PostgreSQL, and Oracle engines.

Amazon RDS generates an SSL certificate for each DB Instance. Once an encrypted connection is established, data transferred between the DB Instance and your application will be encrypted during transfer.

While SSL offers security benefits, be aware that SSL encryption is a compute-intensive operation and will increase the latency of your database connection. SSL support within Amazon RDS is for encrypting the connection between your application and your DB Instance; it should not be relied on for authenticating the DB Instance itself.

Q: What are DB Parameter groups? How are they helpful?

A database parameter group (DB Parameter Group) acts as a “container” for engine configuration values that can be applied to one or more DB Instances. If you create a DB Instance without specifying a DB Parameter Group, a default DB Parameter Group is used. This default group contains engine defaults and Amazon RDS system defaults optimized for the DB Instance you are running. However, if you want your DB Instance to run with your custom-specified engine configuration values, you can simply create a new DB Parameter Group, modify the desired parameters, and modify the DB Instance to use the new DB Parameter Group. Once associated, all DB Instances that use a particular DB Parameter Group get all the parameter updates to that DB Parameter Group.

Q: How can I monitor the configuration of my Amazon RDS resources?



You can use [AWS Config](#) to continuously record configurations changes to Amazon RDS DB Instances, DB Subnet Groups, DB Snapshots, DB Security Groups, and Event Subscriptions and receive notification of changes through [Amazon Simple Notification Service \(SNS\)](#). You can also create AWS Config Rules to evaluate whether these RDS resources have the desired configurations.

Q: Which versions of database engines support Amazon RDS read replicas?

Amazon Aurora: All DB clusters.

Amazon RDS for MySQL: All DB instances support creation of read replicas. Automatic backups must be and remain enabled on the source DB instance for read replica operations. Automatic backups on the replica are supported only for Amazon RDS read replicas running MySQL 5.6 and later, not 5.5.

Amazon RDS for PostgreSQL: DB instances with PostgreSQL version 9.3.5 or newer support creation of read replicas. Existing PostgreSQL instances prior to version 9.3.5 need to be upgraded to PostgreSQL version 9.3.5 to take advantage of Amazon RDS read replicas.

Amazon RDS for MariaDB: All DB instances support creation of read replicas. Automatic backups must be and remain enabled on the source DB Instance for read replica operations.