



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Amazon Aurora is a relational database engine that combines the speed and reliability of high-end commercial databases with the simplicity and cost-effectiveness of open source databases. Amazon Aurora MySQL delivers up to five times the performance of MySQL without requiring any changes to most MySQL applications; similarly, Amazon Aurora PostgreSQL delivers up to three times the performance of PostgreSQL. Amazon RDS manages your Amazon Aurora databases, handling time-consuming tasks such as provisioning, patching, backup, recovery, failure detection and repair. You pay a simple monthly charge for each Amazon Aurora database instance you use. There are no upfront costs or long-term commitments required.

Q: What does "MySQL compatible" mean?

It means that most of the code, applications, drivers and tools you already use today with your MySQL databases can be used with Aurora with little or no change. The Amazon Aurora database engine is designed to be wire-compatible with MySQL 5.6 and 5.7 using the InnoDB storage engine. Certain MySQL features like the MyISAM storage engine are not available with Amazon Aurora.

Q: What does "PostgreSQL compatible" mean?

It means that most of the code, applications, drivers and tools you already use today with your PostgreSQL databases can be used with Aurora with little or no change. The Amazon Aurora database engine is designed to be wire-compatible with PostgreSQL 9.6 and 10, and supports the same set of PostgreSQL extensions that are supported with RDS for PostgreSQL 9.6 and 10, making it easy to move applications between the two engines.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Q: In which AWS regions is Amazon Aurora available?

Please see our [pricing page](#) for current information on regions and prices.

Q: How can I migrate from MySQL to Amazon Aurora and vice versa?

You have several options. You can use the standard `mysqldump` utility to export data from MySQL and `mysqlimport` utility to import data to Amazon Aurora, and vice-versa. You can also use Amazon RDS's DB Snapshot migration feature to migrate an RDS MySQL DB Snapshot to Amazon Aurora using the AWS Management Console. Migration completes for most customers in under an hour, though the duration depends on format and data set size. For more information see [Best Practices for Migrating MySQL Databases to Amazon Aurora](#).

Q: How can I migrate from PostgreSQL to Amazon Aurora and vice versa?

You have several options. You can use the standard `pg_dump` utility to export data from PostgreSQL and `pg_restore` utility to import data to Amazon Aurora, and vice-versa. You can also use Amazon RDS's DB Snapshot migration feature to migrate an RDS PostgreSQL DB Snapshot to Amazon Aurora using the AWS Management Console. Migration completes for most customers in under an hour, though the duration depends on format and data set size.

Q: Does Amazon Aurora participate in the AWS Free Tier?



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

traditional database engines Amazon Aurora never pushes modified database pages to the storage layer, resulting in further IO consumption savings.

You can see how many IOs your Aurora instance is consuming by going to the AWS Console. To find your IO consumption, go to the RDS section of the console, look at your list of instances, select your Aurora instances, then look for the “Billed read operations” and “Billed write operations” metrics in the monitoring section.

Q: Do I need to change client drivers to use Amazon Aurora PostgreSQL?

No, Amazon Aurora will work with standard PostgreSQL database drivers.

Performance

Q: What does "five times the performance of MySQL" mean?

Amazon Aurora delivers significant increases over MySQL performance by tightly integrating the database engine with an SSD-based virtualized storage layer purpose-built for database workloads, reducing writes to the storage system, minimizing lock contention and eliminating delays created by database process threads. Our tests with SysBench on r3.8xlarge instances show that Amazon Aurora delivers over 500,000 SELECTs/sec and 100,000 UPDATEs/sec, five times higher than MySQL running the same benchmark on the same hardware. Detailed instructions on this



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

tools can run without requiring modification. However, one area where Amazon Aurora improves upon MySQL is with highly concurrent workloads. In order to maximize your workload's throughput on Amazon Aurora, we recommend building your applications to drive a large number of concurrent queries and transactions.

Q: How do I optimize my database workload for Amazon Aurora PostgreSQL?

Amazon Aurora is designed to be compatible with PostgreSQL, so that existing PostgreSQL applications and tools can run without requiring modification. However, one area where Amazon Aurora improves upon PostgreSQL is with highly concurrent workloads. In order to maximize your workload's throughput on Amazon Aurora, we recommend building your applications to drive a large number of concurrent queries and transactions.

Hardware and Scaling

Q: What are the minimum and maximum storage limits of an Amazon Aurora database?

The minimum storage is 10GB. Based on your database usage, your Amazon Aurora storage will automatically grow, up to 64 TB, in 10GB increments with no impact to database performance. There is no need to provision storage in advance.

Q: How do I scale the compute resources associated with my Amazon Aurora DB Instance?



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

database performance.

Q: Can I take DB Snapshots and keep them around as long as I want?

Yes, and there is no performance impact when taking snapshots. Note that restoring data from DB Snapshots requires creating a new DB Instance.

Q: If my database fails, what is my recovery path?

Amazon Aurora automatically maintains 6 copies of your data across 3 Availability Zones and will automatically attempt to recover your database in a healthy AZ with no data loss. In the unlikely event your data is unavailable within Amazon Aurora storage, you can restore from a DB Snapshot or perform a point-in-time restore operation to a new instance. Note that the latest restorable time for a point-in-time restore operation can be up to 5 minutes in the past.

Q: What happens to my automated backups and DB Snapshots if I delete my DB Instance?

You can choose to create a final DB Snapshot when deleting your DB Instance. If you do, you can use this DB Snapshot to restore the deleted DB Instance at a later date. Amazon Aurora retains this final user-created DB Snapshot along with all other manually created DB Snapshots after the DB Instance is deleted. Only DB Snapshots are retained after the DB Instance is deleted (i.e., automated backups created for point-in-time restore are not kept).

Q: Can I share my snapshots with another AWS account?



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

manually create a copy of the snapshot, and then share the copy.

Q: How many accounts can I share snapshots with?

You may share manual snapshots with up to 20 AWS account IDs. If you want to share the snapshot with more than 20 accounts, you can either share the snapshot as public, or contact support for increasing your quota.

Q: In which regions can I share my Aurora snapshots?

You can share your Aurora snapshots in all AWS regions where Aurora is available.

Q. Can I share my Aurora snapshots across different regions?

No. Your shared Aurora snapshots will only be accessible by accounts in the same region as the account that shares them.

Q: Can I share an encrypted Aurora snapshot?

Yes, you can share encrypted Aurora snapshots.

High Availability and Replication

Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Q: What kind of replicas does Aurora support?

Amazon Aurora MySQL and Amazon Aurora PostgreSQL support Amazon Aurora Replicas, which share the same underlying volume as the primary instance. Updates made by the primary are visible to all Amazon Aurora Replicas. With Amazon Aurora MySQL, you can also create MySQL Read Replicas based on MySQL’s binlog-based replication engine. In MySQL Read Replicas, data from your primary instance is replayed on your replica as transactions. For most use cases, including read scaling and high availability, we recommend using Amazon Aurora Replicas.

You have the flexibility to mix and match these two replica types based on your application needs:

Feature	Amazon Aurora Replicas	MySQL Replicas
Number of replicas	Up to 15	Up to 5
Replication type	Asynchronous (milliseconds)	Asynchronous (seconds)
Performance impact on primary	Low	High
Act as failover target	Yes (no data loss)	Yes (potentially minutes of data loss)
Automated failover	Yes	No



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Q: Can I failover my application from my current primary to the cross-region replica?

Yes, you can promote your cross-region replica to be the new primary from the RDS console. The promotion process typically takes a few minutes depending on your workload. The cross-region replication will stop once you initiate the promotion process.

Q: Can I prioritize certain replicas as failover targets over others?

Yes. You can assign a promotion priority tier to each instance on your cluster. When the primary instance fails, Amazon RDS will promote the replica with the highest priority to primary. If there is contention between 2 or more replicas in the same priority tier, then Amazon RDS will promote the replica that is the same size as the primary instance. For more information on failover logic, read the Amazon Aurora User Guide.

Q: Can I modify priority tiers for instances after they have been created?

You can modify the priority tier for an instance at any time. Simply modifying priority tiers will not trigger a failover.

Q: Can I prevent certain replicas from being promoted to the primary instance?

You can assign lower priority tiers to replicas that you don't want promoted to the primary instance. However, if the higher priority replicas on the cluster are unhealthy or unavailable for some reason, then Amazon RDS will promote the lower priority replica.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

failover typically completes within 30 seconds.

- If you do not have an Amazon Aurora Replica (i.e. single instance), Aurora will first attempt to create a new DB Instance in the same Availability Zone as the original instance. If unable to do so, Aurora will attempt to create a new DB Instance in a different Availability Zone. From start to finish, failover typically completes in under 15 minutes.

Your application should retry database connections in the event of connection loss.

Q: If I have a primary database and an Amazon Aurora Replica actively taking read traffic and a failover occurs, what happens?

Amazon RDS will automatically detect a problem with your primary instance and begin routing your read/write traffic to an Amazon Aurora Replica. On average, this failover will complete within 30 seconds. In addition, the read traffic that your Amazon Aurora Replicas were serving will be briefly interrupted.

Q: How far behind the primary will my replicas be?

Since Amazon Aurora Replicas share the same data volume as the primary instance, there is virtually no replication lag. We typically observe lag times in the 10s of milliseconds. For MySQL Read Replicas, the replication lag can grow indefinitely based on change/apply rate as well as delays in network communication. However, under typical conditions, under a minute of replication lag is common.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Yes, all Amazon Aurora DB Instances must be created in a VPC. With Amazon VPC, you can define a virtual network topology that closely resembles a traditional network that you might operate in your own datacenter. This gives you complete control over who can access your Amazon Aurora databases.

Q: Does Amazon Aurora encrypt my data in transit and at rest?

Yes. Amazon Aurora uses SSL (AES-256) to secure the connection between the database instance and the application. Amazon Aurora allows you to encrypt your databases using keys you manage through AWS Key Management Service (KMS). On a database instance running with Amazon Aurora encryption, data stored at rest in the underlying storage is encrypted, as are its automated backups, snapshots, and replicas in the same cluster. Encryption and decryption are handled seamlessly. For more information about the use of KMS with Amazon Aurora, see the [Amazon RDS User's Guide](#).

Q: Can I encrypt an existing unencrypted database?

Currently, encrypting an existing unencrypted Aurora instance is not supported. To use Amazon Aurora encryption for an existing unencrypted database, create a new DB Instance with encryption enabled and migrate your data into it.

Q: How do I access my Amazon Aurora database?



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Q: What is Amazon Aurora Serverless?

[Amazon Aurora Serverless](#) is an on-demand, autoscaling configuration for the MySQL-compatible edition of Amazon Aurora. An Aurora Serverless DB cluster automatically starts up, shuts down, and scales capacity up or down based on your application's needs. Aurora Serverless provides a relatively simple, cost-effective option for infrequent, intermittent, or unpredictable workloads. Read more in the [Amazon Aurora User Guide](#).

Q: Which versions of Amazon Aurora are supported for Aurora Serverless?

Aurora Serverless is currently available for Aurora with MySQL 5.6 compatibility.

Q: Can I migrate an existing Aurora DB cluster to Aurora Serverless?

Yes, you can restore a snapshot taken from an existing Aurora provisioned cluster into an Aurora Serverless DB Cluster (and vice versa).

Q: How do I connect to an Aurora Serverless DB cluster?

You access an Aurora Serverless DB cluster from within a client application running in the same Amazon Virtual Private Cloud (VPC). You can't give an Aurora Serverless DB cluster a public IP address.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

rate per second of ACU usage, with a minimum of 5 minutes of usage each time the database is activated. Storage and I/O prices are the same for provisioned and Serverless configurations. View an Aurora Serverless [pricing example](#).

Parallel Query

Q: What is Amazon Aurora Parallel Query?

[Amazon Aurora Parallel Query](#) refers to the ability to push down and distribute the computational load of a single query across thousands of CPUs in Aurora's storage layer. Without Parallel Query, a query issued against an Amazon Aurora database would be executed wholly within one instance of the database cluster; this would be similar to how most databases operate.

Q: What's the target use case?

Parallel Query is a good fit for analytical workloads requiring fresh data and good query performance, even on large tables. Workloads of this type are often operational in nature.

Q: What benefits does Parallel Query provide?

Faster performance: Parallel Query can speed up analytical queries by up to 2 orders of magnitude.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Q: Is there any chance that performance will be slower?

Yes, but we expect such cases to be rare.

Q: What changes do I need to make to my query to take advantage of Parallel Query?

No changes in query syntax are required. The query optimizer will automatically decide whether to use PQ for your specific query. To check if a query is using PQ, you can view the query execution plan by running the EXPLAIN command. If you wish to bypass the heuristics and force Parallel Query for test purposes, use the `aurora_pq_force` session variable.

Q: How do I turn the feature on or off?

Parallel Query can be enabled and disabled dynamically at both the global and session level using the `aurora_pq` parameter.

Q: Are there any additional charges associated with using Parallel Query?

No. You aren't charged for anything other than what you already pay for instances, IO, and storage.

Q: Since Parallel Query reduces IO, will turning it on reduce my Aurora IO charges?

No, IO costs for your query are metered at the storage layer, and will be the same or larger with Parallel Query turned on. Your benefit is the improvement in query performance.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

Not initially. At this time, you can only turn it on for database clusters that aren't running the Serverless or Backtrack features. Further, it doesn't support functionality specific to Aurora with MySQL 5.7 compatibility.

Q: If Parallel Query speeds up queries with only rare performance losses, should I simply turn it on for all the time?

No. While we expect Parallel Query to improve query latency in most cases, you may incur higher IO costs. We recommend that you thoroughly test your workload with the feature enabled and disabled; once you're convinced that Parallel Query is the right choice, you can rely on the query optimizer to automatically decide which queries will use PQ. In the rare case when the optimizer doesn't make the optimal decision, you can override the setting.

Q: Can Aurora Parallel Query replace my data warehouse?

Aurora Parallel Query is not a data warehouse, and doesn't provide the functionality typically found in such products. It's designed to speed up query performance on your relational database, and is suitable for use cases such as operational analytics, when you need to perform fast analytical queries on fresh data in your database.



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

WHAT'S NEW WITH AWS

Learn about the latest products, services, and more



Sign In to the Console

- Twitter
- Facebook
- Podcast
- Twitch
- AWS Blog
- RSS News Feed
- Email Updates

AWS & Cloud Computing

- [What is Cloud Computing?](#)
- [What is Caching?](#)
- [What is NoSQL?](#)
- [What is DevOps?](#)
- [What is Docker?](#)
- [Products & Services](#)
- [Customer Success](#)
- [Economics Center](#)
- [Architecture Center](#)
- [Security Center](#)



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

[High Performance Computing](#)

[Mobile Services](#)

[Digital Marketing](#)

[Game Development](#)

[Digital Media](#)

[Government & Education](#)

[Health](#)

[Financial Services](#)

[Windows on AWS](#)

[Retail](#)

[Power & Utilities](#)

[Oil & Gas](#)

[Automotive](#)

[Blockchain](#)

[Manufacturing](#)

Resources & Training

[Developers](#)

[Java on AWS](#)

[JavaScript on AWS](#)

[Mobile on AWS](#)

[PHP on AWS](#)

[Python on AWS](#)

[Ruby on AWS](#)

[.NET on AWS](#)

[SDKs & Tools](#)



Amazon Aurora ▾

Overview

Features ▾

DB Engines ▾

Pricing

Resources

FAQs

Customers

Partners

[Contact Us](#)

Amazon Web Services is Hiring.

Amazon Web Services (AWS) is a dynamic, growing business unit within Amazon.com. We are currently hiring Software Development Engineers, Product Managers, Account Managers, Solutions Architects, Support Engineers, System Engineers, Designers and more. Visit our [careers](#) page to learn more.

Amazon.com is an Equal Opportunity-Affirmative Action Employer – Minority / Female / Disability / Veteran / Gender Identity / Sexual Orientation.

Language [Bahasa Indonesia](#) | [Deutsch](#) | [English](#) | [Español](#) | [Français](#) | [Italiano](#) | [Português](#) | [Tiếng Việt](#) | [Türkçe](#)
[Русский](#) | [ไทย](#) | [日本語](#) | [한국어](#) | [中文 \(简体\)](#) | [中文 \(繁體\)](#)

[Site Terms](#) | [Privacy](#)

© 2018, Amazon Web Services, Inc. or its affiliates. All rights reserved.