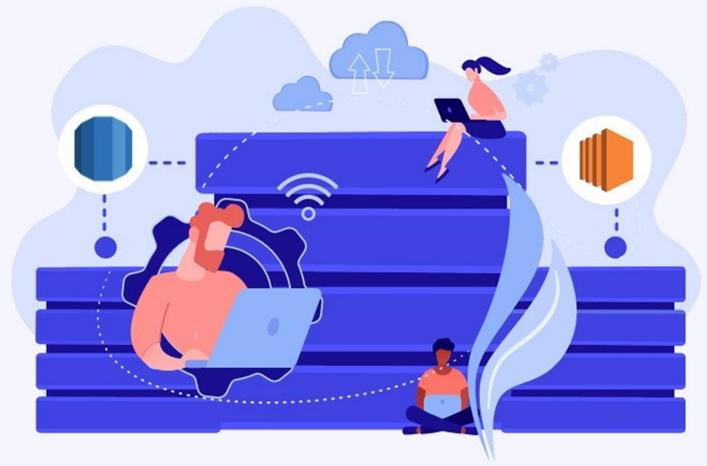


RDS vs EC2: What to Choose for Microsoft SQL Server



Amazon Web Services offers two main choices for deploying Microsoft SQL Server in the cloud: Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Relational Database Service (Amazon RDS).

Amazon Relational Database Service (Amazon RDS), is a cloud-based web service that makes it easy to set up, run, and scale a relational database. It offers an automatic installation process, disk provisioning, upgrades, security patches, and backups of your SQL Server databases. Other than that, it also allows you to set up a highly scalable environment, fully managed by AWS using Multi-AZ (Availability Zone) synchronous replication.

Amazon Elastic Compute Cloud (Amazon EC2), is another web-based service that offers scalable cloud computing. It permits developers to spin up virtual machines, which offers to compute capacity for IT projects that run in global AWS data centers. With Amazon EC2 you will get full control; you are accountable for the administration of your database. Amazon EC2 allows you to provision and set up database instances and storage across the world to provide low latency to your end-users worldwide.

Generally speaking, if you prefer more control over customization of your database, it's optimal to run your SQL Server on Amazon EC2, but if you want to use a managed service that does most of the heavy lifting for you, running SQL server using Amazon RDS is the optimal choice. Let's further explore these two options.

Option 1: Managed Deployment—Microsoft SQL Server on Amazon RDS

Amazon RDS provides a simple way to deploy Microsoft SQL Server in the AWS cloud. It takes full responsibility for your database.



The entire process of configuration, management, maintenance, and security is automated by AWS. Other than that, Amazon RDS offers high performance and compatibility due to its support for Oracle, SQL Server, MySQL, PostgreSQL, and Aurora. It allows you to easily configure read replicas or set up synchronous replication across availability zones for enhanced performance, availability, and durability.

It also offers automatic backups and encryption at rest and in transit.

Pros

Scalability: With Amazon RDS you receive great amounts of scalability. It allows you to deploy multiple editions of SQL Server in minutes with cost-efficient and re-sizable compute capacity.



More time to focus on your core business: Amazon RDS does most of the heavy lifting for you. Time-consuming database administration tasks like provisioning, automated backups, software patching, monitoring, and hardware scaling, are all managed by Amazon RDS, enabling you to have more time to focus your key business initiatives.

Pay per use: With Amazon RDS for SQL Server, you pay for what you use. It is priced hourly, and there is no need to make any significant upfront investment. Additionally, you have the flexibility to increase or decrease the allocated resources as required, which allows you to further optimize your costs. You can even spin up RDS instances quickly for occasional jobs and terminate them immediately when not required.

If your workloads are more predictable, you can take advantage of reserved database instances for even more significant discounts.

Cons

Limited Instances and Storage: Each RDS instance has a maximum number of SQL Server databases it can support, ranging from 30 to 100, depending on the instance type used. Individual databases also can be no larger than 16 TB for General Purpose SSD storage and Provisioned IOPS storage, and 1 Tb for Magnetic storage.

Restricted Operating system Access: Operating System Access is not permitted when using Amazon RDS. In case you need to migrate databases, you will not be able to access native backups written to the server.

Option 2: Self-Managed Deployment—Microsoft SQL Server with Amazon EC2 and Amazon EBS



Complete control is one of the key benefits of running Microsoft SQL Server on Amazon EC2. You can install and deploy SQL Server on an EC2 instance, and add Amazon Elastic Block Store (EBS) as durable and pluggable storage. The EBS volumes can also be encrypted to protect your data both at rest and in transit. You can easily supervise your maintenance windows, use of ports, and the number of instances per database.

Amazon EC2 allows you to meet unique performance, replication, or archival by giving you the required flexibility.

Pros

High Scalability: With Amazon EC2, organizations can achieve scalability and high availability by quickly provisioning and configuring new EC2 instances, and scale database instances by changing the EC2 instances size or storage capacity. One can even reduce these instances when the traffic is low. High performance can be achieved by provisioning Microsoft SQL Server in AWS Regions across the world to provide low latency to geographical distributed end users. Multi-Availability Zone deployment will help in higher fault tolerance.



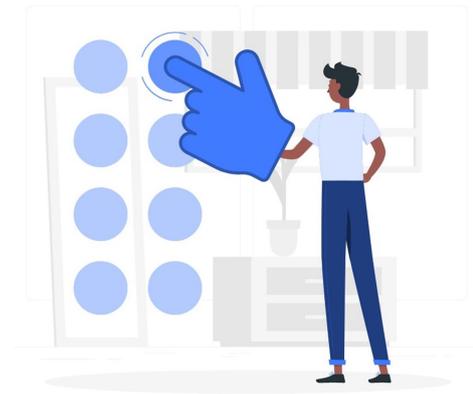
Simple Backups: There are two ways in which backups can be created on AWS. Using AWS Backup service to back up entire Amazon Elastic Compute Cloud (Amazon EC2) instances. One can even copy the backups to other AWS Regions for better disaster recovery and higher availability. Second is by taking EBS snapshots to back up and restore volumes with a single click. After writing data to an Amazon EBS volume, one can periodically create snapshots of the volume to use as a baseline for new volumes or for data backup.

Snapshots have several advantages, such as:

- Point-in-time data backup & restore.
- Disaster recovery and high availability - users can create new volumes in separate AZs or even copy snapshots to a separate region in order to create a volume in that region.
- Immediate instance and data recovery for improved RTO (recovery time objective)

Licensing: Another benefit to using Amazon EC2 is that it enables you to bring your own license (BYOL). This means you won't need to repurchase another SQL Server license when moving to AWS.

Flexibility: The databases that are built using Amazon EBS and Amazon EC2 offers you more flexibility. It gives you full control, therefore you can decide how to configure the database and where to locate the data. You also have the ability to expand its use beyond AWS ecosystem, such as in hybrid and multi-cloud deployments.



Cons

The downsides of self-managing SQL servers on AWS are the increased complexity of managing Amazon EC2 instances and their Amazon EBS volumes.

Organizations are accountable for data replication and recovery across database instances in all regions in the event of failure or database crash.

Conclusion:

Amazon RDS offers relief from the administrative responsibilities automating the entire process of configuration, management, and maintenance of your database with some limitations. This allows you to focus on more important tasks. On the other hand, Amazon EC2 offers complete control and flexibility of your database, although that does come with some increased operational overhead.

Once you understand the needs of your application, you would be able to choose the right solution.



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