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# Optimize your Amazon Aurora resources to reduce costs

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# Agenda

- Amazon Aurora cost model
- Aurora cost components
- How to monitor and optimize Aurora cost
- Tools for cost observability and optimization

# Aurora cost model (pay as you go)

# Use what you need, pay for what you use

## Traditional cost model

- Provision for peak usage
- Pay for peak usage regardless of actual use

## Aurora cost model

- Flexibility to provision exactly what you need
- Only pay for what you use
- Storage and read replicas can scale automatically
- In case of Aurora Serverless, compute can scale automatically

# Aurora cost components

# Primary cost components

**Compute**

- Instance type and size (provisioned)
  - Example: db.r6g.large
- Aurora capacity units (serverless)

**Storage**

- Storage volume size
- IOPS consumed (read and write)

# Additional cost components

### Backup

- Automated backups
- Manual snapshots

### Data transfer

- Network utilization for data coming in and going out

# Additional cost components

### Advanced Aurora features

- Global database
- Backtrack
- Machine learning (ML) integration
- Parallel query
- Snapshot export to Amazon S3
- Database activity streams

### Pay as you use

- Features follow the same pay-as-you-use cost model
- Charged for resources consumed

# Compute cost (provisioned)

- Simple hourly pricing
- Pay as you go

**Provisioned example**

- Instance type: db.r7g.xlarge
- Instance active: 10 days (240 hours)*
- Price per hour (US-East): $0.553
- You will be charged: 240 x $0.553 = $132.72

*Assuming instance was shutdown after 10 days

# Compute cost (serverless)

- Auto scaling configuration, automatically adjusts compute capacity
- Scales compute capacity on demand (up and down)

**Serverless example**

- Aurora provisioned (db.r7g.2xlarge/64 GB) = $1.106/hours * 730 hours/month = **$807.38**
- Serverless v2 = $0.12/ACU per hour (**32 ACU** * **30 hours** + **4 ACU** * **700 hours**) = **$451.2**
- Serverless v2 = $0.12/ACU per hour (**32 ACU** * **150 hours** + **4 ACU** * **580 hours**) = **$854.40**

# Storage cost

- Storage consumption is billed in per GB-month increments
- Storage and I/O costs are decoupled and charged separately
- Storage grows and shrinks automatically*
- No pre-provisioning of storage, grows in 10 GB increments

**Example**

- Region: US-East-1
- Initial DB size: 100 GB
- Daily growth: 30 GB
- GB month: (100*30 + 30*29 . . . . . + 30*1)/30 = 390


- Cost per GB month: $0.10
- Total cost for the month: 390*$0.10 = $39

*MySQL versions 1.23 and 2.09, 3.01, and above;
Aurora PostgreSQL versions 3.30 and 2.6 and above

# I/O cost components

- I/Os are input/output operations performed by the Aurora database engine against Aurora storage
- Every database page read operation counts as one I/O
- Each database page is 16 KB in Aurora MySQL-Compatible Edition and 8 KB in Aurora PostgreSQL-Compatible Edition
- Write I/Os are counted in 4 KB units

# Aurora I/O-Optimized – New!

# Amazon Aurora I/O-Optimized

- Pay for compute and storage only with no charges for I/O operations
- Price predictability: No pay-per-request I/O charges
- Up to 40% cost savings
- Improved performance: increased throughput and reduced I/O latency
- Supported on Aurora Serverless v2 and provisioned (on-demand and reserved) instances

# Other cost components

# Backup and snapshot cost

- Automated backups and manual snapshots
- No charge for backups up to 100% of total Aurora database size
- If backup retention period is 1 day, you are not charged for backup
- Billed as per GB-month; average backup storage space used through the month is billed
- Manual snapshots that fall within the retention period are not charged separately during the period

# Data transfer cost

- Data transfer cost is billed by GB data transferred in and out of an Aurora cluster
- Data transfer for in-Region cluster replication – no cost
- Data transfer between Amazon Elastic Cloud Compute (Amazon EC2) client and Aurora in same Availability Zone – no cost
- Data transfer between Aurora and Amazon EC2 in different Availability Zones and Regions is billed
- No charge for data transfer in from internet (VPN); tiered charges for outgoing data transfer

# Aurora features, cost, and best practices

- Aurora Global Database
- Aurora fast cloning
- Snapshot export
- Backtrack

**Example**
- Backtrack window: 10 hours
- Change records/hour: 10,000
- Billed amount per hour: $0.012 x100,000/1,000,000 = $0.0012/hr

# Resources

- AWS Cost Explorer

aws.amazon.com/aws-cost-management/aws-cost-explorer

- AWS Pricing Calculator

calculator.aws

- Planning Aurora I/O cost

aws.amazon.com/blogs/database/planning-i-o-in-amazon-aurora

- AWS Cost and Usage Reports

docs.aws.amazon.com/cur/latest/userguide/what-is-cur.html

- Aurora pricing page

aws.amazon.com/rds/aurora/pricing

# Thank you!

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