AWS Security & Compliance

INTRODUCTION TO AWS

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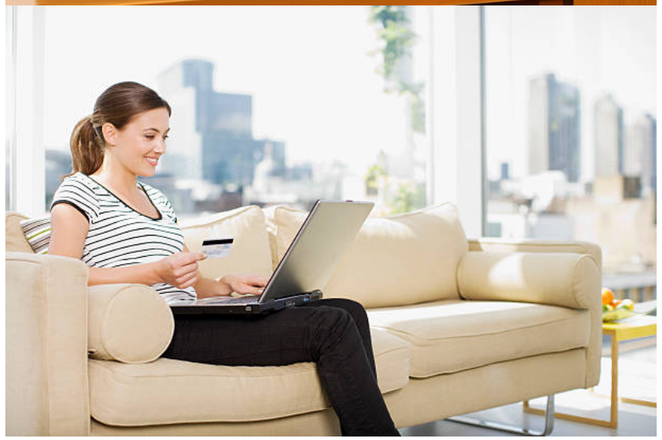
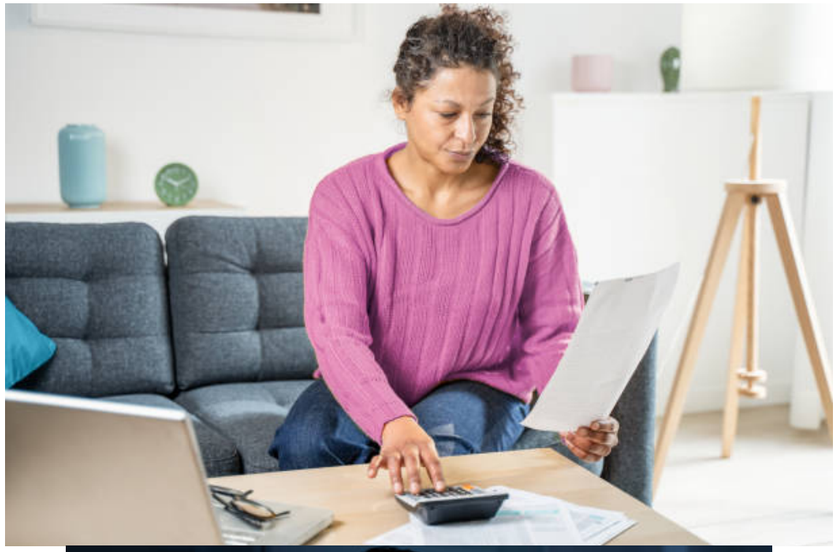
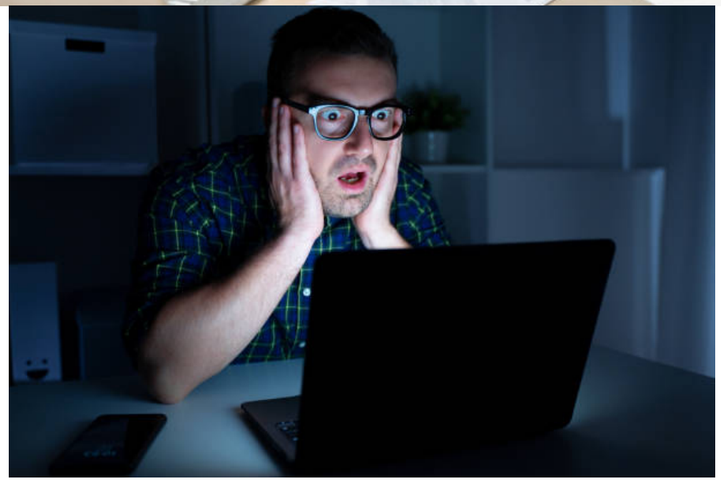
Why is security paramount?







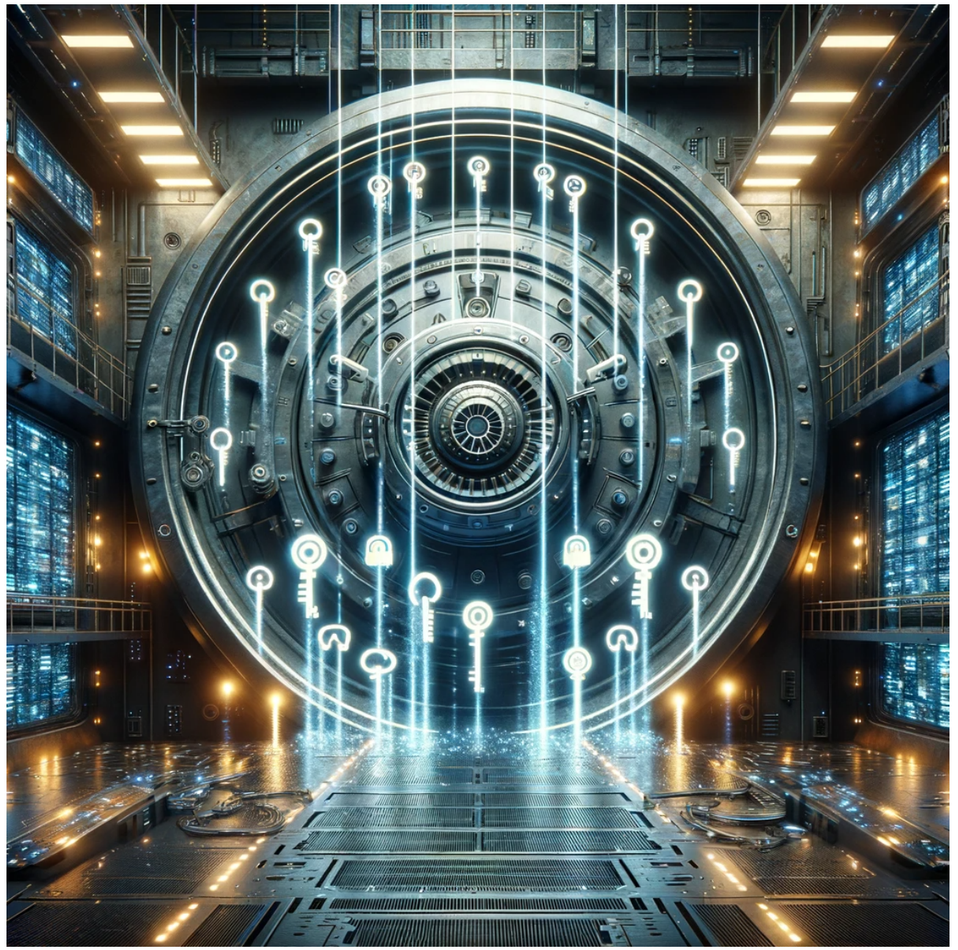
Introduction to IAM

- IAM = Identity and Access Management
- Acts as a gatekeeper
- Only authenticated users are allowed in
- Ensures authenticated users are authorized

Utilizing IAM

Introducing KMS

- KMS = Key Management Service
- High-security vault
- Create and manage cryptographic keys
- Safeguarding information

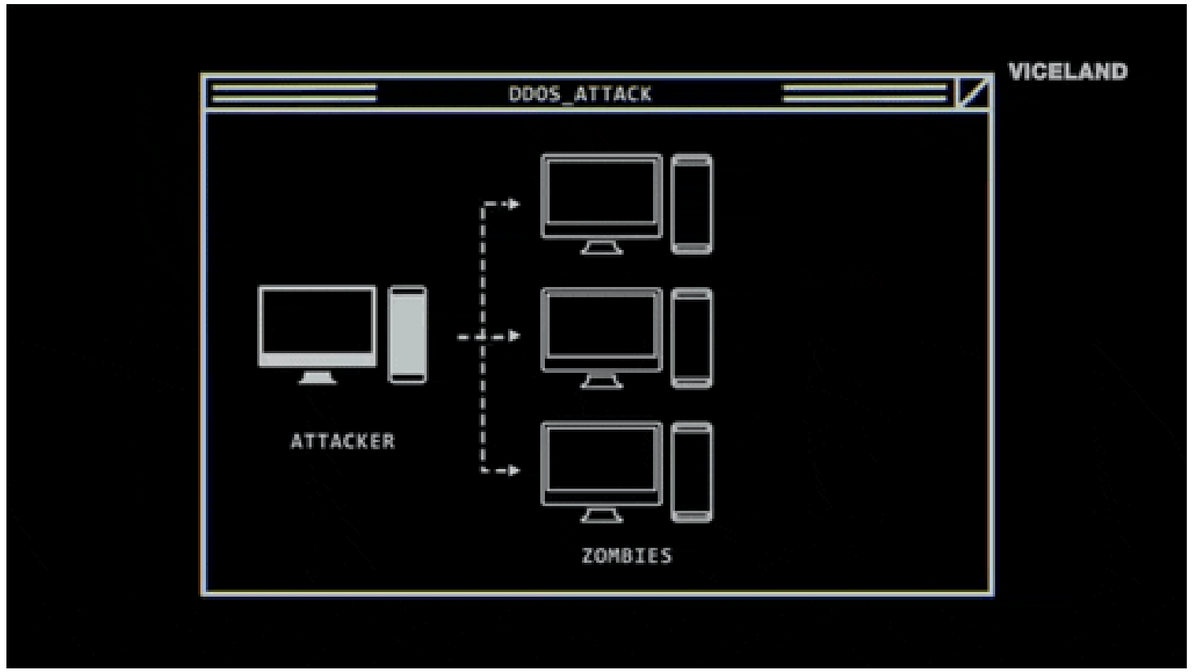


AWS KMS in action

- Very secure safe
  - You control who accesses it
- Sensitive customer data that needs encryption
- Master key encrypts data
- People with permissions access this key

DDoS attacks

- DDoS = Distributed Denial of Service
- Attacker spams an application with requests
- About 30 attacks a day[1]
  - Financial sector
  - Technology sector
  - Healthcare sector



[1] securitymagazine.com

AWS Shield

- Manages who's accessing your applications
- Keeps malicious traffic away
- AWS Shield Standard
  - Common DDoS attacks
- AWS Shield Advanced
  - Mitigation capabilities
  - 24/7 Response Team

AWS compliance

- Follows laws of digital land
- Helps with regulatory requirements
  - HIPAA for healthcare
  - GDPR for data protection in Europe
- Provides resources/documentation for data compliance

Let's practice!

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AWS pricing and cost management

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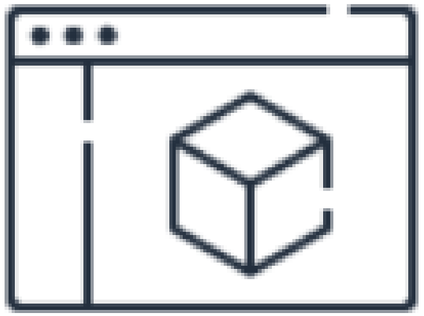
AWS pricing overview

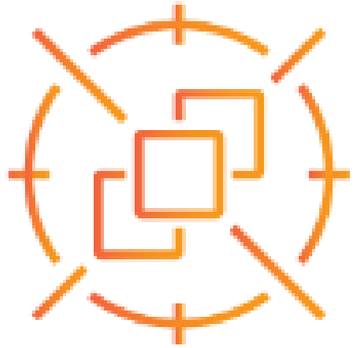
Pay-as-you-go

Savings plans

Reserved instances



Spot instances



Pay-as-you-go

- Only pay for services you consume
- No long-term contracts or complex licensing
- Automatically scale services and your costs with your workload

Savings plans and reserved instances

Savings Plans

- Like a gym membership
- Save money on our usage
- Reduce cost by modernizing workloads
- Centralize cost management

Reserved Instances

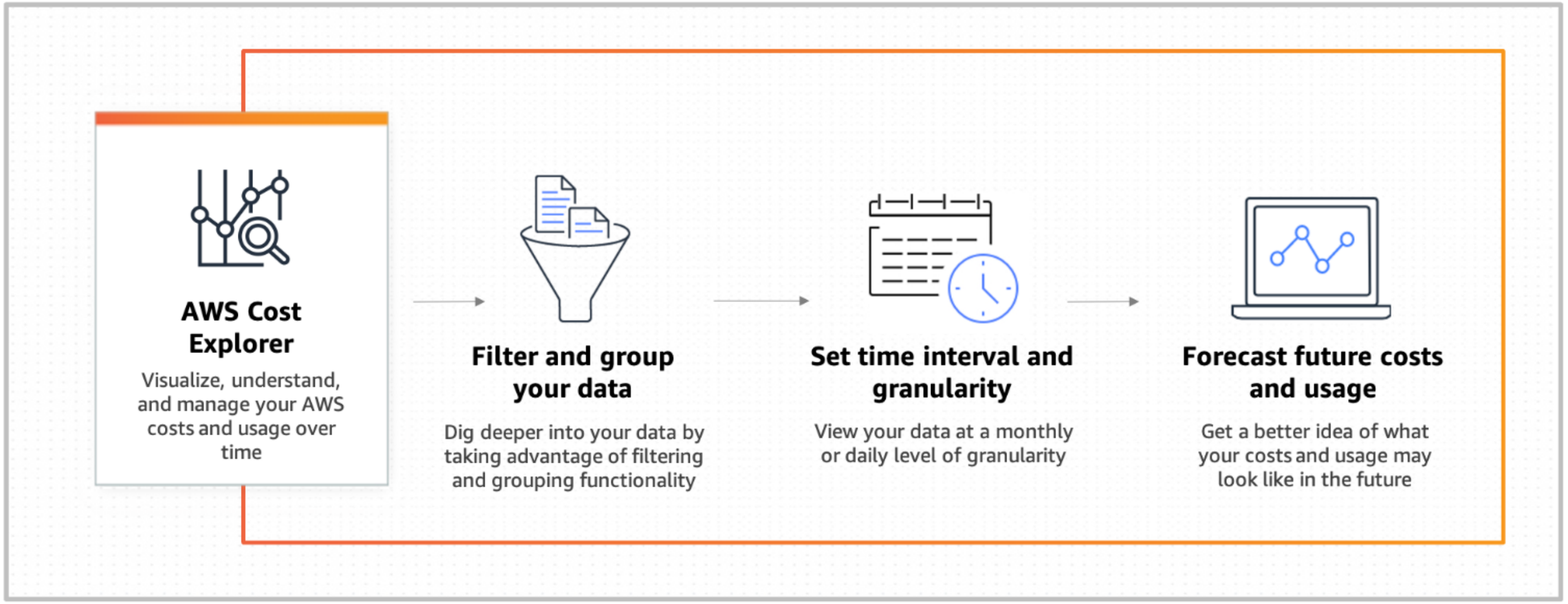
- Best for steady-state workloads
- Save money and retain flexibility with reserving capacity

[1] https://aws.amazon.com/savingsplans/

Spot instances

- Similar to flying stand-by
- Ideal for flexible and interruptible workloads
- Up to 90% savings compared to on-demand prices
- Best practices for fault-tolerant applications

AWS cost explorer



AWS budgets and cost alarms

- Set custom budget thresholds for your services
- Receive alerts before costs exceed your budget
- Integrate with AWS Cost Explorer for detailed budget tracking and forecasts

Let's practice!

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Data Analytics in AWS

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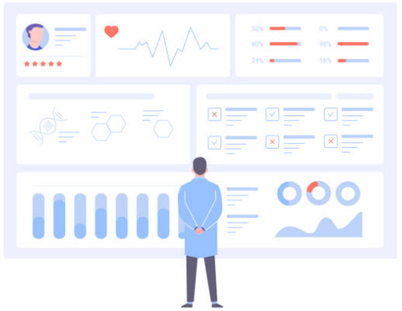
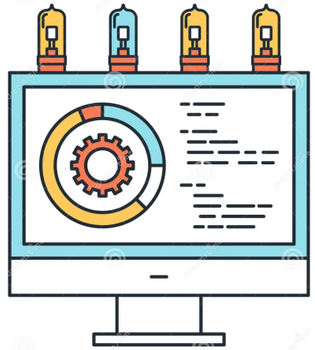
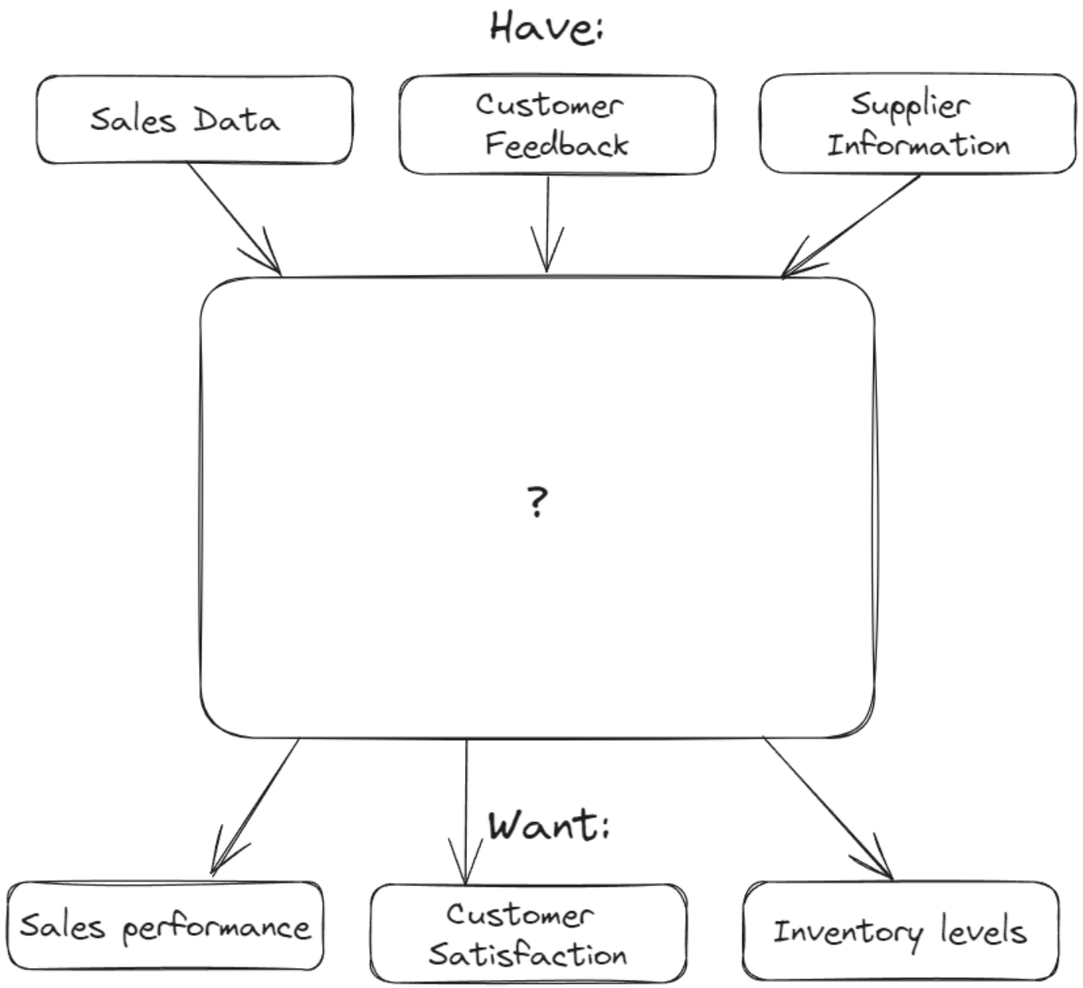
Why analytics?





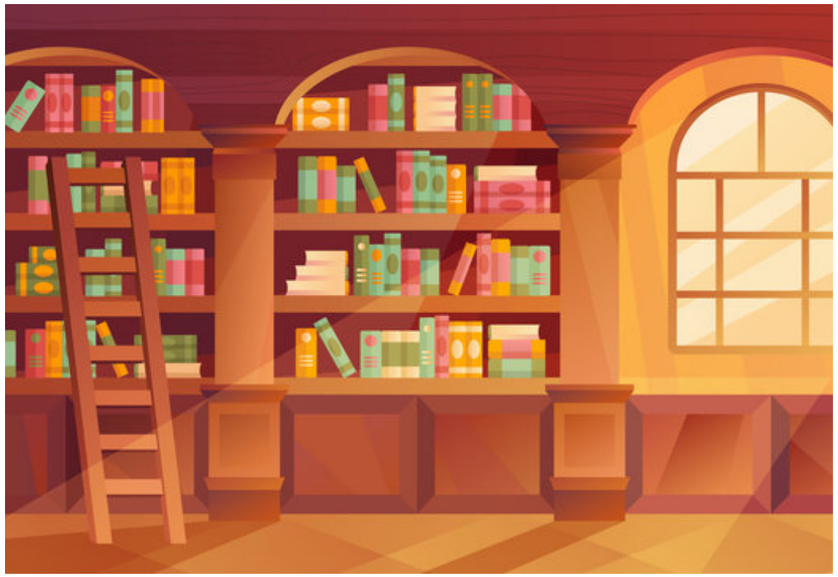
DATA PROCESSING

Gathering information from data



Introduction to Redshift

- Like a library
- Redshift as a data warehousing solution
- Extremely scalable
- Fast query performance



amazon REDSHIFT

How does Redshift work?

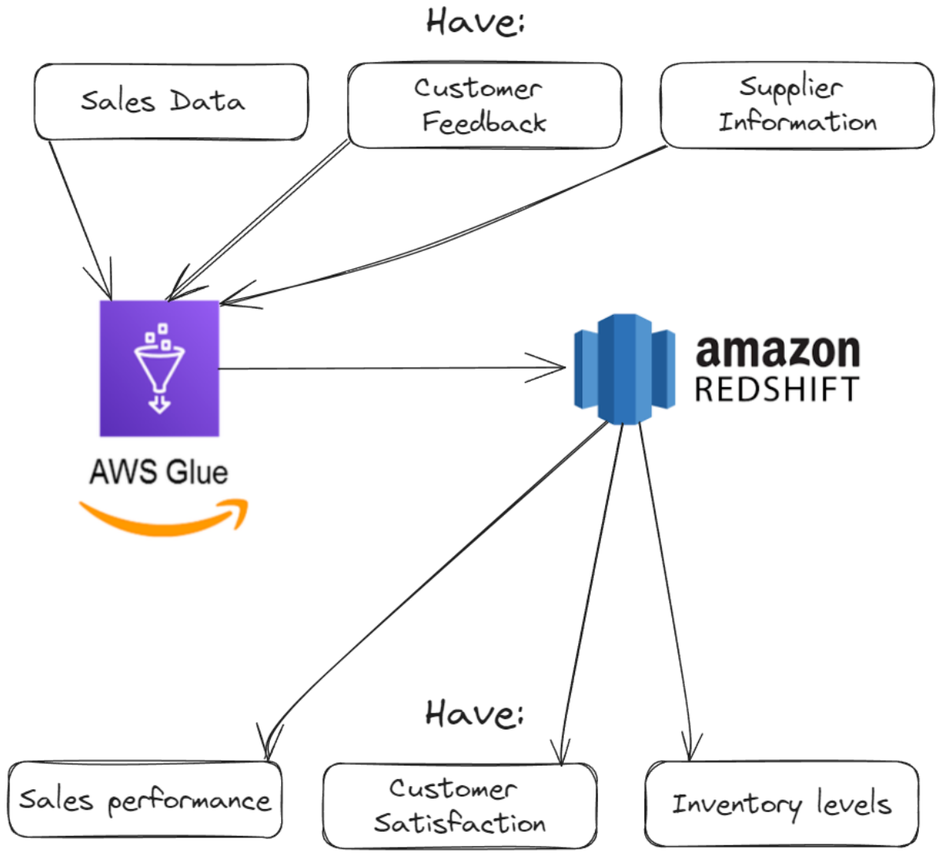
- Columns and rows
- Optimized for analysis

Introduction to AWS Glue

- Discover, prepare, and load data
- AWS Glue feeds to Redshift

Redshift and AWS Glue in action

1. Data Preparation with AWS Glue
   - Discovers input data
   - Cleans and prepares data
2. Loading Data into Redshift
   - AWS Glue to load the data into Redshift
3. Analysis with Redshift
   - Run queries to analyze data



Let's practice!

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Role of analytics in AWS as a whole

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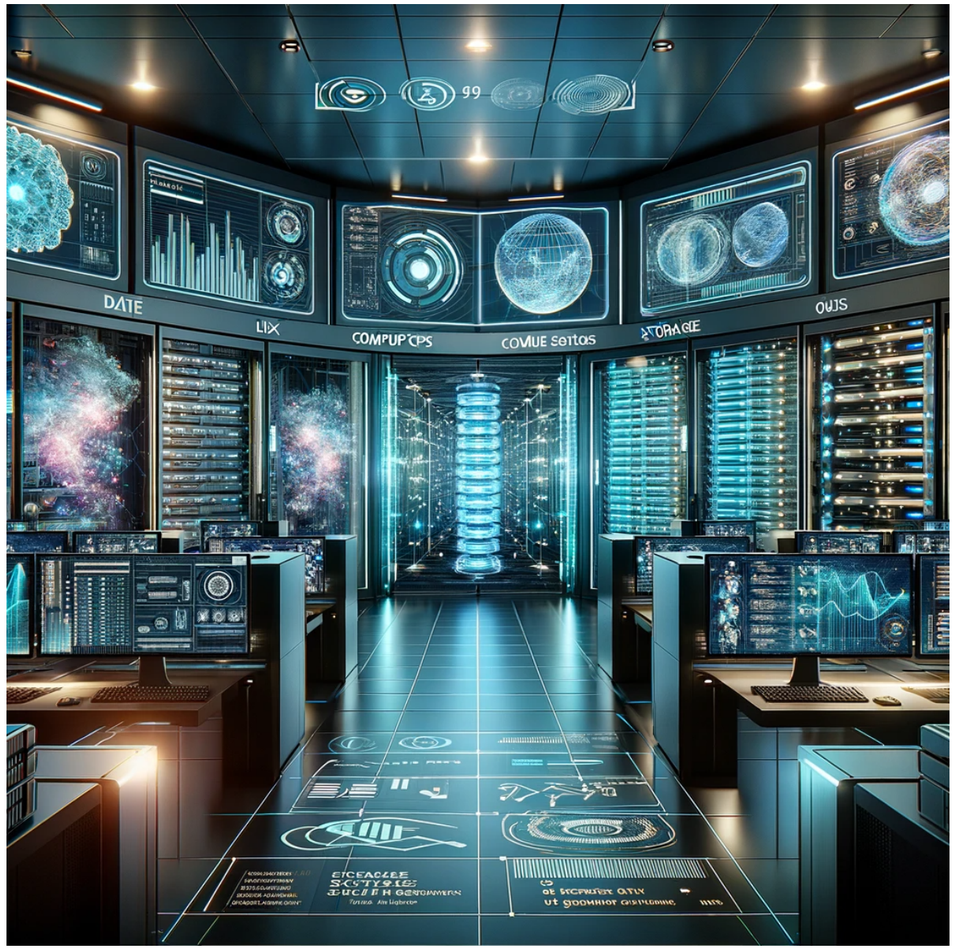
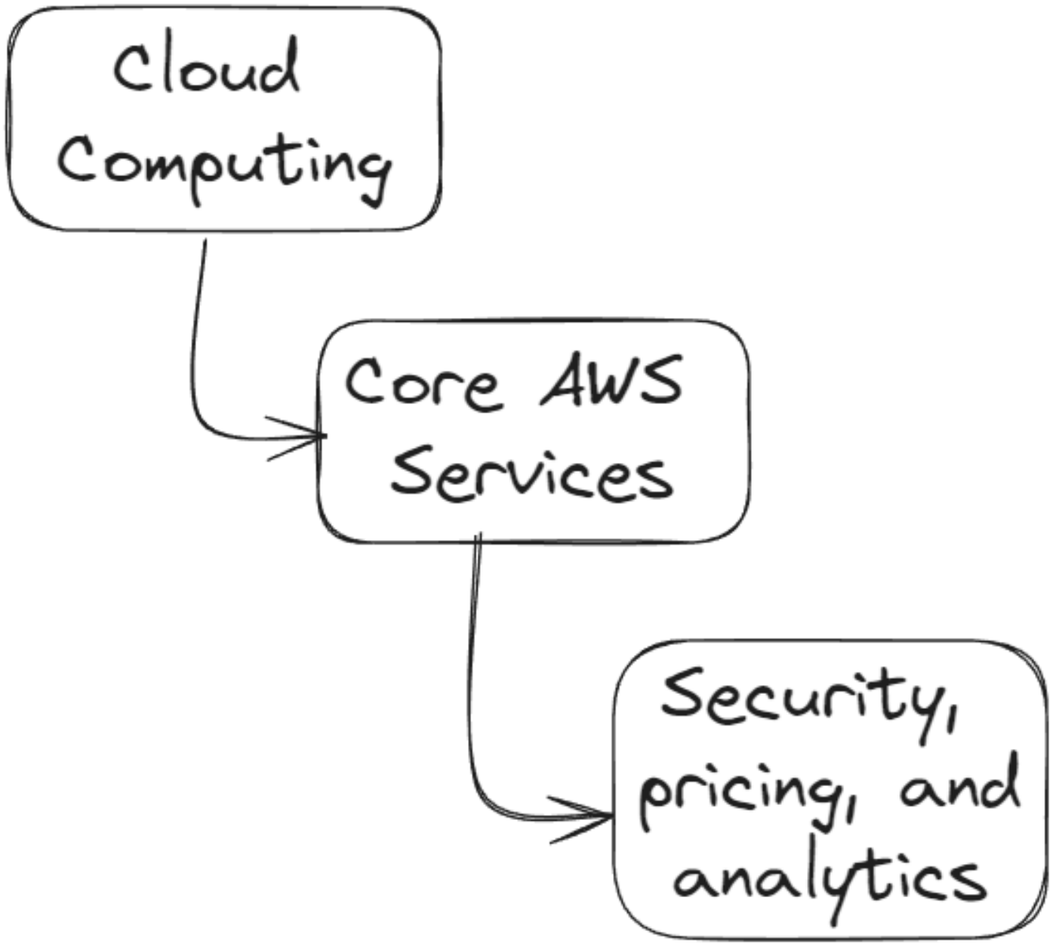
Analytics in AWS

- Can redshift handle unstructured data?
  - Not quite
  - Designed for structured data
- This lesson:
  - Understanding how AWS systems work together for analytics
  - Unravel complexity



AWS ecosystem: A Recap



Analytics and core AWS services

- EC2 and Lambda provide compute resources
- S3 and Glacier store data being analyzed

Global architecture and analytics

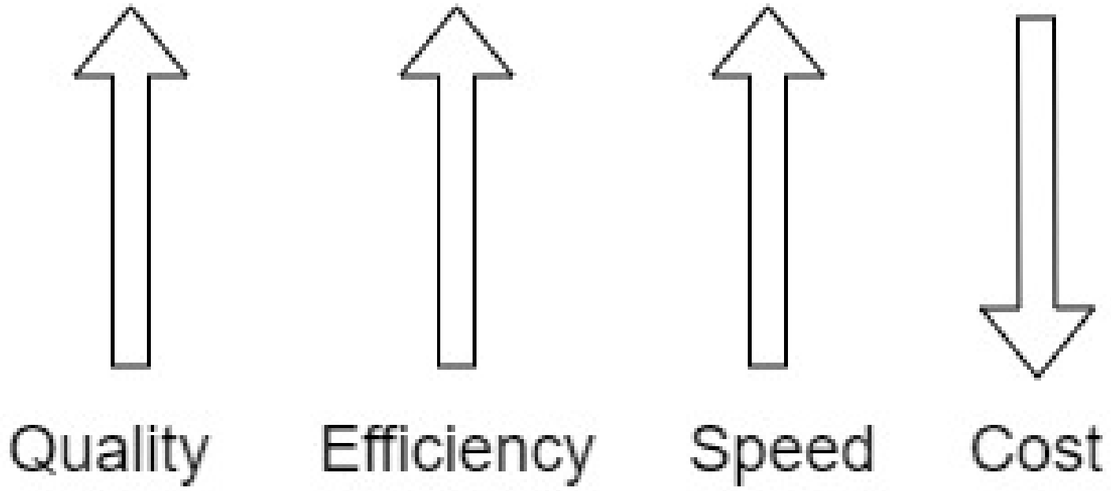
- Regions
- Availability zones
- Edge locations

Security compliance through analytics

- Analytics provides:
  - System access
  - Usage patterns
  - Potential security threats

Cost efficiency through analytics

- Analysis helps scrutinize patterns
- Creates avenues for cost optimization
- Helps maximize utility of AWS services



Let's practice!

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Congratulations!

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Course recap

- What AWS is
- **AWS Core Service Domains**
  - Compute
  - Storage
  - Databases
  - Networking

Diving deeper

Compute services

- EC2
- Lambda

Storage services

- S3
- Glacier

Database services

- RDS
- DynamoDB

Security, pricing and analytics

Security and Compliance

- IAM (Identity and Access Management)
- KMS (Key Management Service)
- Shield

Pricing and cost management tools

AWS Analytics

- AWS Glue
- Redshift

What did we miss?

Advanced topics

- Advanced compute capabilities
- Sophisticated networking options
- AI (Artificial Intelligence) and ML (Machine Learning) services

Encouragement and next steps

- **This course**
  - Provided a solid foundation
- **We recommend**
  - Advanced courses
    - Get hands-on experience with AWS
    - Engage with AWS and DataCamp Community

Thank you!

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