Week 10 Case Study: Cloud Resource Tagging for Cost Visibility and Management

Objective

Understand how implementing a consistent **resource tagging strategy** helps improve **cost visibility**, **allocation**, and **accountability** in a multi-department cloud environment.

- ## Background Scenario

Company Name: CloudMart Inc.
Industry: E-commerce
Cloud Provider: AWS (similar concepts apply to Azure or GCP)
Monthly Cloud Spend: ~$50,000

CloudMart hosts its entire e-commerce platform in the cloud. Over time, its cloud infrastructure has grown rapidly — involving **EC2 instances**, **S3 buckets**, **RDS databases**, **Lambda functions**, and **CloudFront distributions** spread across multiple AWS accounts.

However, the **Finance** and **DevOps** teams are facing major challenges:

- They **cannot easily determine** which department or project is driving the cloud costs.
- **Unassigned resources** (e.g., unused EBS volumes, orphaned snapshots) are inflating bills.
- Some teams **forget to delete resources** after testing.
- The **CFO wants a monthly cost breakdown** by department and project.

- ## Problem Statement

The CTO tasks the **Cloud Governance Team** to implement a **resource tagging policy** that:

1. Improves **cost allocation visibility** (by department, project, and environment).
2. Enables **automated cost reporting** in AWS Cost Explorer or through a third-party tool.
3. Prevents **non-compliant resources** from being deployed without required tags.

- Cloud Environment Overview

Department	Projects	Environments	Common AWS Services Used
Marketing	CampaignApp, AdsAPI	Dev, Prod	EC2, S3, Lambda
Sales	CRMTool	Dev, Prod	RDS, EC2, CloudFront
Analytics	DataLake, Insights	Dev, Prod	S3, Glue, Athena, Redshift

Currently, only **20% of the resources are tagged**, and the tags are inconsistent — e.g.,

- `proj=adsapi` in one account, but `Project=Ads_API` in another.
- Some tags use `environment=production` while others use `env=prod`.

- Task

The Cloud Governance Team must design and implement a **Tagging Framework** to achieve:

1. **Standardized tags** across all AWS accounts.
2. **Automation** to enforce tagging during deployment (via IaC or policies).
3. **Reports and dashboards** for cost visibility by tag.

- Proposed Standard Tag Keys

Tag Key	Description	Example Value
Department	Business unit responsible for the cost	Marketing
Project	Application or project name	CampaignApp
Environment	Environment type	Dev / Prod
Owner	Resource owner (team or individual)	j.smith@cloudmart.com
CostCenter	Accounting cost center code	CC101
CreatedBy	Automation tool or person who created it	Terraform / Jenkins

- Implementation Steps (AWS) (*Just for reference here*)

1. **Define Tagging Policy**
   Create a formal document that specifies:
   - Required and optional tags
   - Naming conventions (case, underscores, etc.)
   - Responsibility for tagging (DevOps, project owners, automation)
2. **Apply Tags to Existing Resources**
   - Use **AWS Tag Editor** or **CLI scripts** to find and fix untagged resources.

- o Example CLI command:
- o aws resourcegroupstaggingapi get-resources --region us-east-1
3. **Automate Tagging Enforcement**
   - o Enable **AWS Config Rules** (e.g., required-tags).
   - o Integrate tagging into **CloudFormation / Terraform templates**.
4. **Monitor and Report**
   - o Use **AWS Cost Explorer** to view cost by Department and Project.
   - o Enable **Cost Allocation Tags** in the Billing Console.
5. **Optimize**
   - o Identify unused resources by tag.
   - o Create **budgets and alerts** by department.

- Outcome (After 3 Months)

Department	Tagged Resources (%)	Monthly Cost Before	Monthly Cost After	Savings	Key Insights
Marketing	98%	$20,000	$17,000	$3,000	Found unused EC2s in dev
Sales	95%	$15,000	$14,000	$1,000	Right-sized RDS instances
Analytics	90%	$15,000	$13,000	$2,000	Deleted old S3 snapshots

- **Total Savings:** $6,000/month (12% cost reduction)

Discussion Questions

1. What are the key benefits of resource tagging in cloud cost management?
2. How does tagging improve accountability and transparency?
3. What challenges might arise when enforcing a tagging policy?
4. How can automation tools like AWS Config or Terraform help maintain compliance?
5. How would you design a dashboard to visualize costs by tag?