Infrastructure as Code (IaC) – Drift Detection Explained Simply

This document provides a beginner-friendly explanation of Drift Detection in Terraform, a core concept in Infrastructure as Code (IaC).

# What is Drift Detection?

When you're using Infrastructure as Code (IaC) tools like Terraform, you define what your infrastructure (like servers, databases, networks, etc.) should look like in code.  
  
But sometimes, the actual infrastructure in the cloud changes outside of Terraform — maybe someone made a manual change directly in the AWS or Azure console.  
  
This is called drift — because your real infrastructure has "drifted away" from the desired state defined in your Terraform code.

# Simple Definition

Drift detection is the process of identifying when your real infrastructure is different from what’s defined in your Terraform code.

# How Drift Detection Works (Using terraform plan)

The terraform plan command is used to compare what you’ve written in your code (your intended infrastructure) with what’s actually deployed.  
  
Example Scenario:  
- Your code creates a Virtual Machine with 2 CPUs.  
- Someone manually changes it to 4 CPUs in the cloud provider portal.  
- When you run terraform plan, it says:  
 "Hey! I see a change. The VM has 4 CPUs now, but your code says it should have 2."  
  
You can either:  
- Update your code if the change was intentional.  
- Or run terraform apply to fix the infrastructure to match your code.

# Why Is Drift Detection Important?

- Helps avoid surprises in production.  
- Keeps your infrastructure consistent and version-controlled.  
- Helps you audit and track changes over time.

# Analogy: Cake Recipe

Think of Terraform as a recipe for making your favorite cake.  
  
- You wrote down all the ingredients and steps.  
- One day, someone sneaks in and adds extra sugar (without changing your recipe).  
- When you bake it again, it tastes different.  
- Drift detection is like checking the cake and realizing the sugar level doesn’t match the recipe — so you can fix it.