Cloud Deployment Models – Part 1

This lesson introduces you to some types of cloud deployment models in the industry.

We'll cover the following

Overview

In the cloud computing universe, businesses leverage different cloud deployment models to fulfill their different service deployment requirements.

The four primary cloud deployment models are:

1. *Public cloud*
2. *Private cloud*
3. *Hybrid cloud*
4. *Community cloud*

Let’s briefly go through each of them to find out what they are and why we need them.

Public cloud

Public cloud as the name implies is “open to all,” I mean the product offerings of the cloud are available to indie developers, startups, mid-sized businesses,

enterprise businesses, or anyone looking for a cloud platform to deploy their service.
A few examples of public cloud are *AWS, GCP, IBM Cloud, and Microsoft Azure*.
We've discussed before that public clouds generally offer a freemium plan and are very economical. Therefore, an indie developer developing an online multiplayer game will prefer a public cloud, like AWS, to deploy their service as opposed to picking another form of cloud deployment model.

Private cloud

Private cloud, as the name implies, is private in nature. It runs the infrastructure only for a single business. A private cloud is way more expensive than a public cloud because there are no economies of scale involved. The cost of running the entire infrastructure has to be taken care of just by a single organization.

A business can choose to run a private cloud on its premises, commonly known as *on-prem*, or it can lease a data center of a third-party cloud provider to run its services. Generally, when running a private cloud, businesses prefer to run their infrastructure *on-prem*.

What is on-prem?

On-prem means the service of the business runs from within the confines of the organization. The business has complete control over the infrastructural setup. Data stays in its own private network. Nobody other than the authorized individuals has access to the information.

The need for on-prem

Security and control

The primary reason for on-prem deployment is security. When companies use a third-party cloud service, the data of the organization gets shared with the vendor of the service. This opens up potential data breach possibilities. Data is critical to the existence of businesses, especially if they are in the finance, military, or health care domain.

Customization

Besides security another reason to get your own data center is the ability to customize your own setup. There are instances when businesses need unique

solutions catering to their needs that a third-party cloud vendor does not offer.

Vendor lock-in

Another reason to set up your own infrastructure is to avoid *vendor lock-in*. Many third-party cloud providers offer their own high-performance proprietary solutions that can power our service. Now, to integrate our code with a proprietary solution, we would need to write a lot of custom code with respect to that proprietary product.

Google Cloud Datastore is one unique proprietary offering of GCP. If we use Google Cloud Datastore as our database, we have to write persistence code specifically for that product, and our data model has to be designed with regards to how Google Cloud Datastore works.

In the future, if we want to migrate to an open-source solution like MongoDB or something, we have to rewrite the entire code dealing with persistence in the application. Therefore, when using a proprietary solution, we cannot immediately make the switch to another product. The switch requires a major restructuring of code and quite the re-investment of resources. We are sort of locked with the proprietary product of the vendor. This situation is known as *vendor lock-in*.

In this scenario, our persistence layer is locked in with the proprietary database of Google, and to move out, we have to redesign the data model from scratch. To avoid this situation, many businesses prefer to set up their own infrastructure and run open-source tech to have a cent-per-cent control. They have a long-term vision in mind.

Okay!! Just FYI, I'll discuss vendor lock-in and how to pick the right cloud provider in detail later in this course. Stay tuned.

For now, let's have a look at some real-world examples where businesses have entirely, or partly, moved their service from a public cloud platform to their own data center for security, infrastructure control, and other business reasons.

Real-world, on-prem hosting

Earlier, *Facebook* moved *Instagram* from *AWS* to its own data centers (see this article for more details). Now, it plans to move *WhatsApp* from *IBM Cloud* to its own data centers (see details here).

Dropbox moved away from *AWS* and now, runs its own infrastructure (see details here).

> ***Recommended read***: Buying cloud at scale: Lessons from Lyft and Uber.

We will continue this discussion about cloud deployment models in the next lesson.