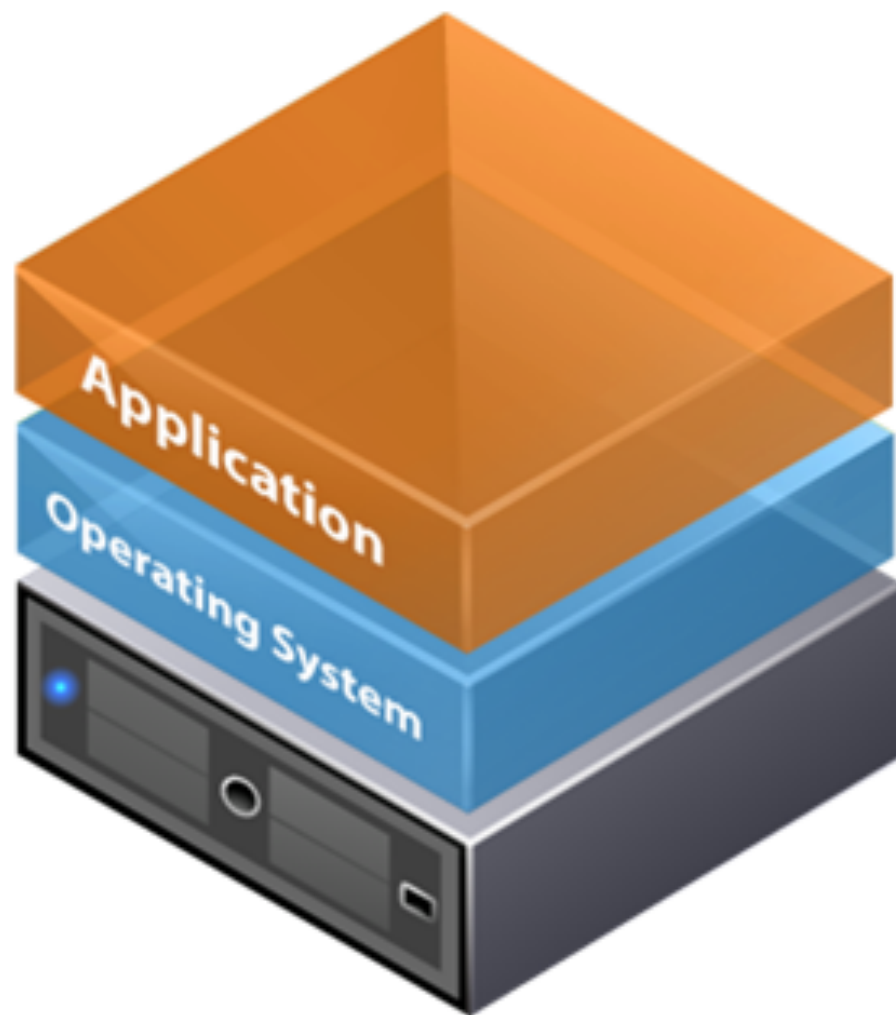# Virtualisation - OpenStack
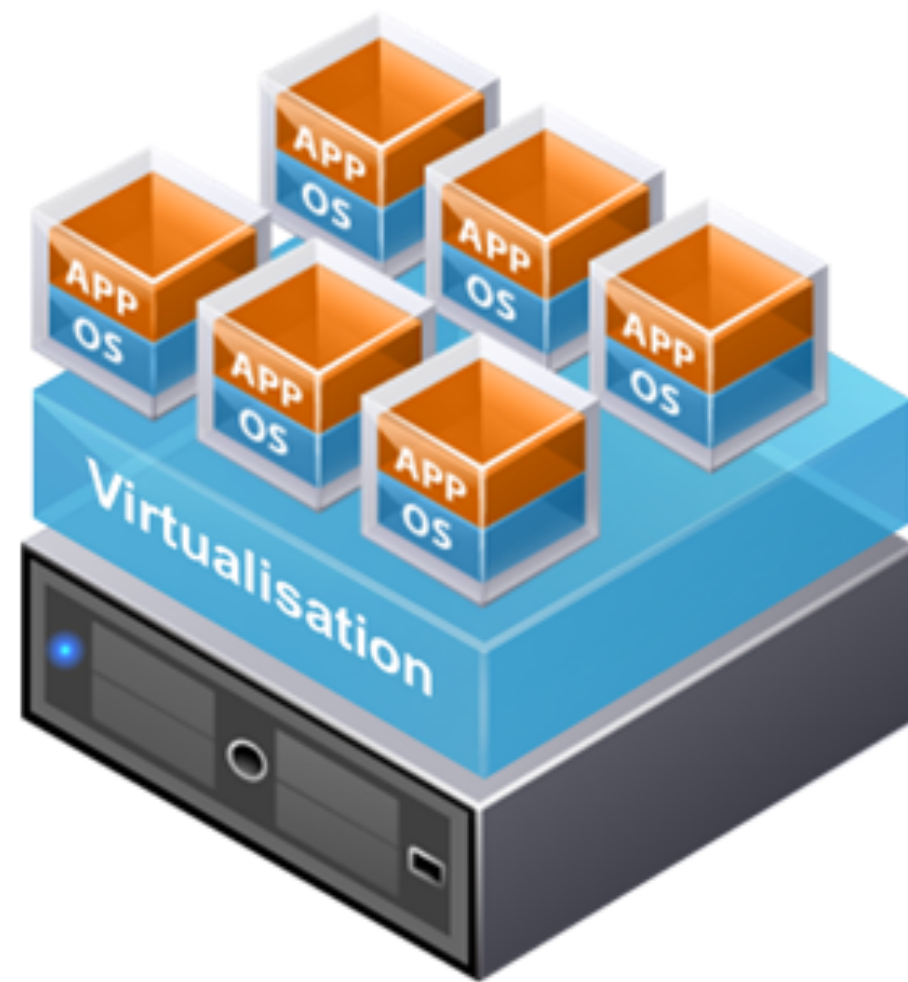
TM352 - Block 3

How would you describe this image in your own words?

What is virtualisation? - click me

Traditional Architecture
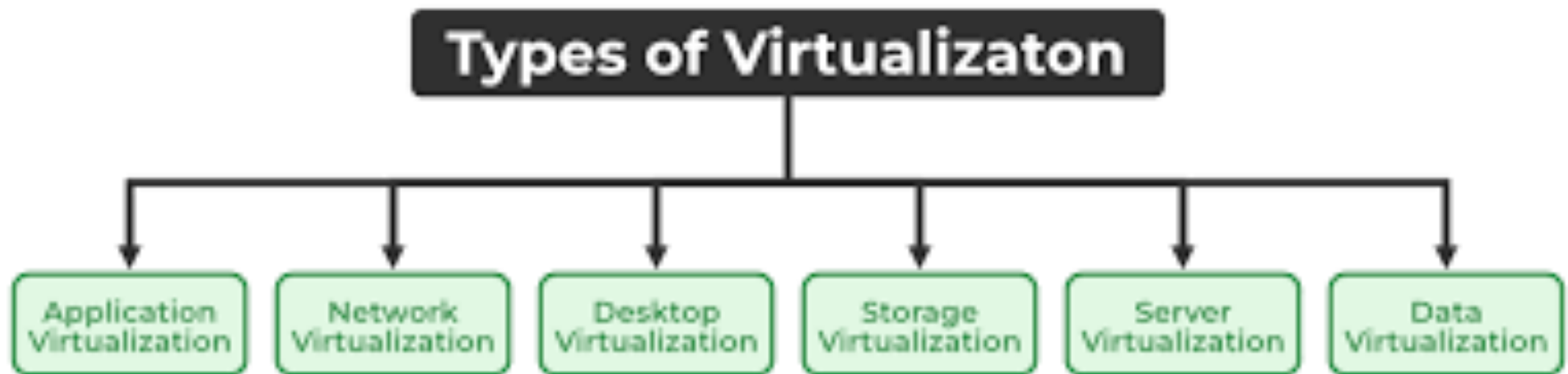
Virtual Architecture

What is virtualisation?

is the act of creating a virtual (rather than actual) version of something at the same abstraction level

Actual cat

Virtual cat

Types of Virtualizaton

- Application Virtualization
- Network Virtualization
- Desktop Virtualization
- Storage Virtualization
- Server Virtualization
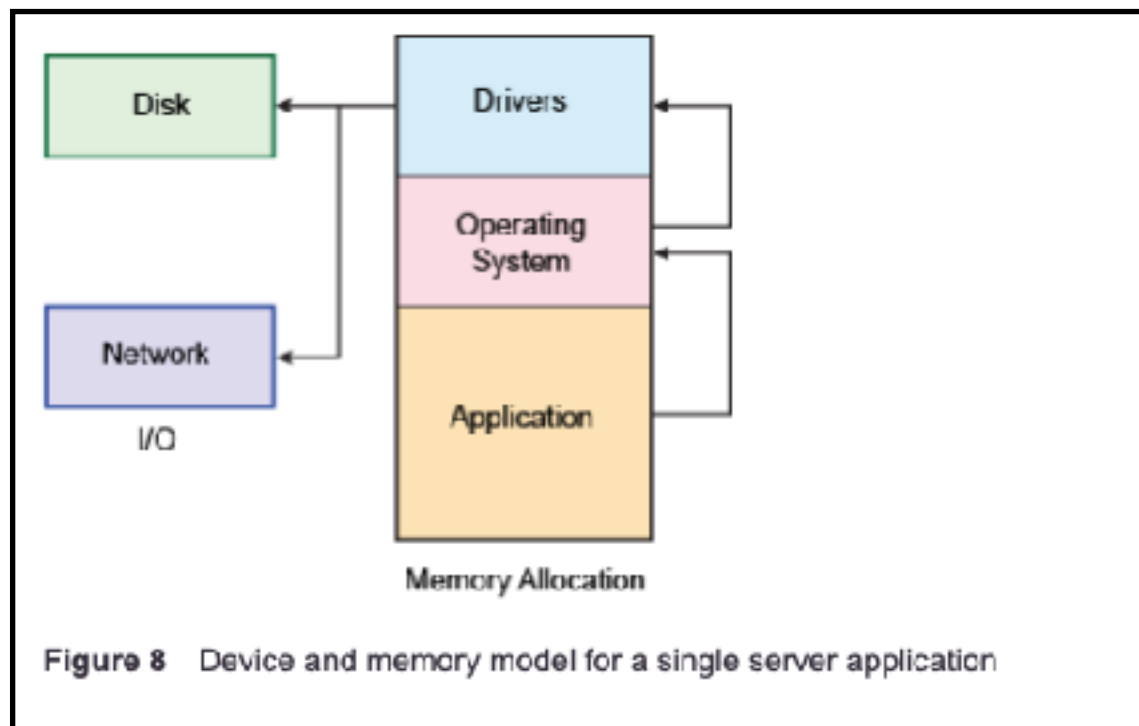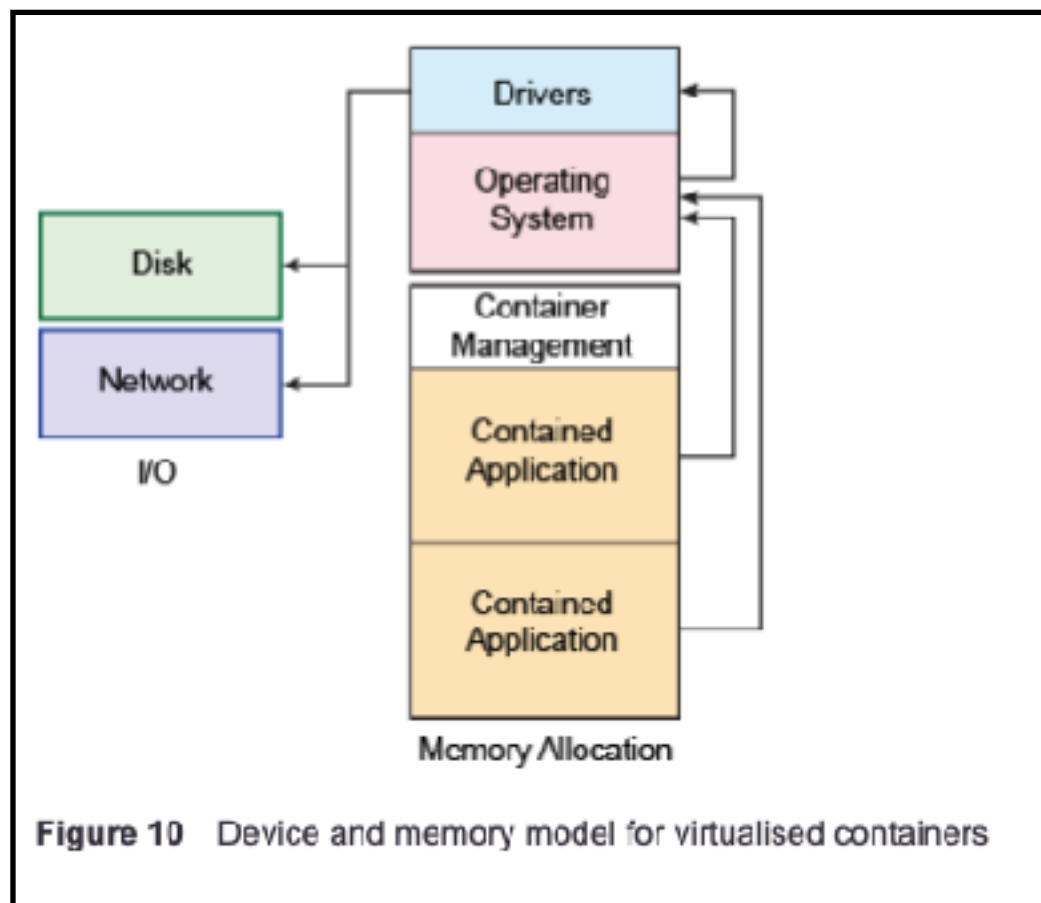- Data Virtualization

It is method of logically dividing the system resources provided by mainframe computers between different applications.

It started in the 1960s ….- click me!

Single server application

Figure 8   Device and memory model for a single server application

Virtualised containers

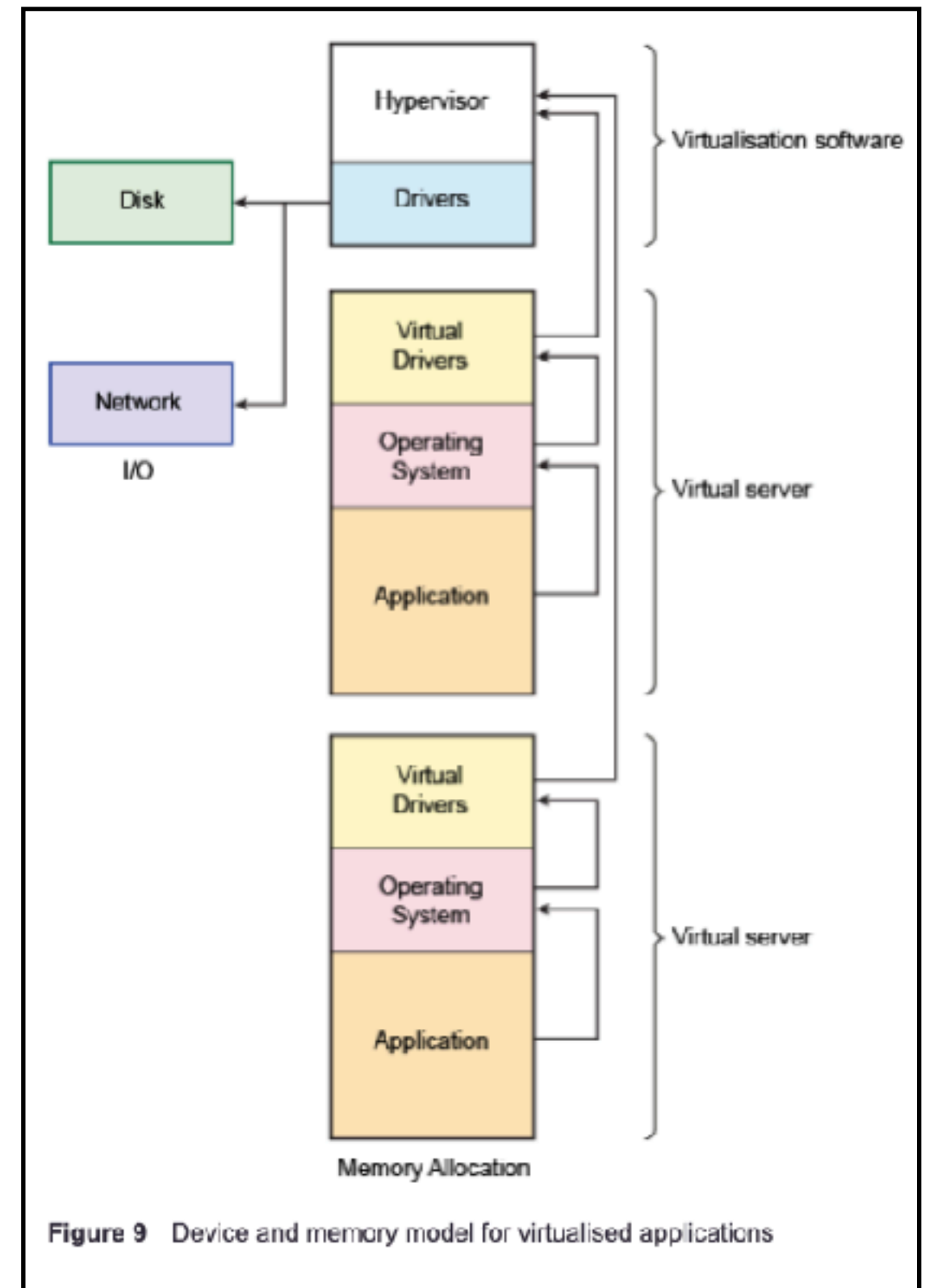Figure 10   Device and memory model for virtualised containers

Device and memory model for virtualised applications

Figure 9   Device and memory model for virtualised applications

Virtualised applications using virtual machines

Figure 9 Device and memory model for virtualised applications
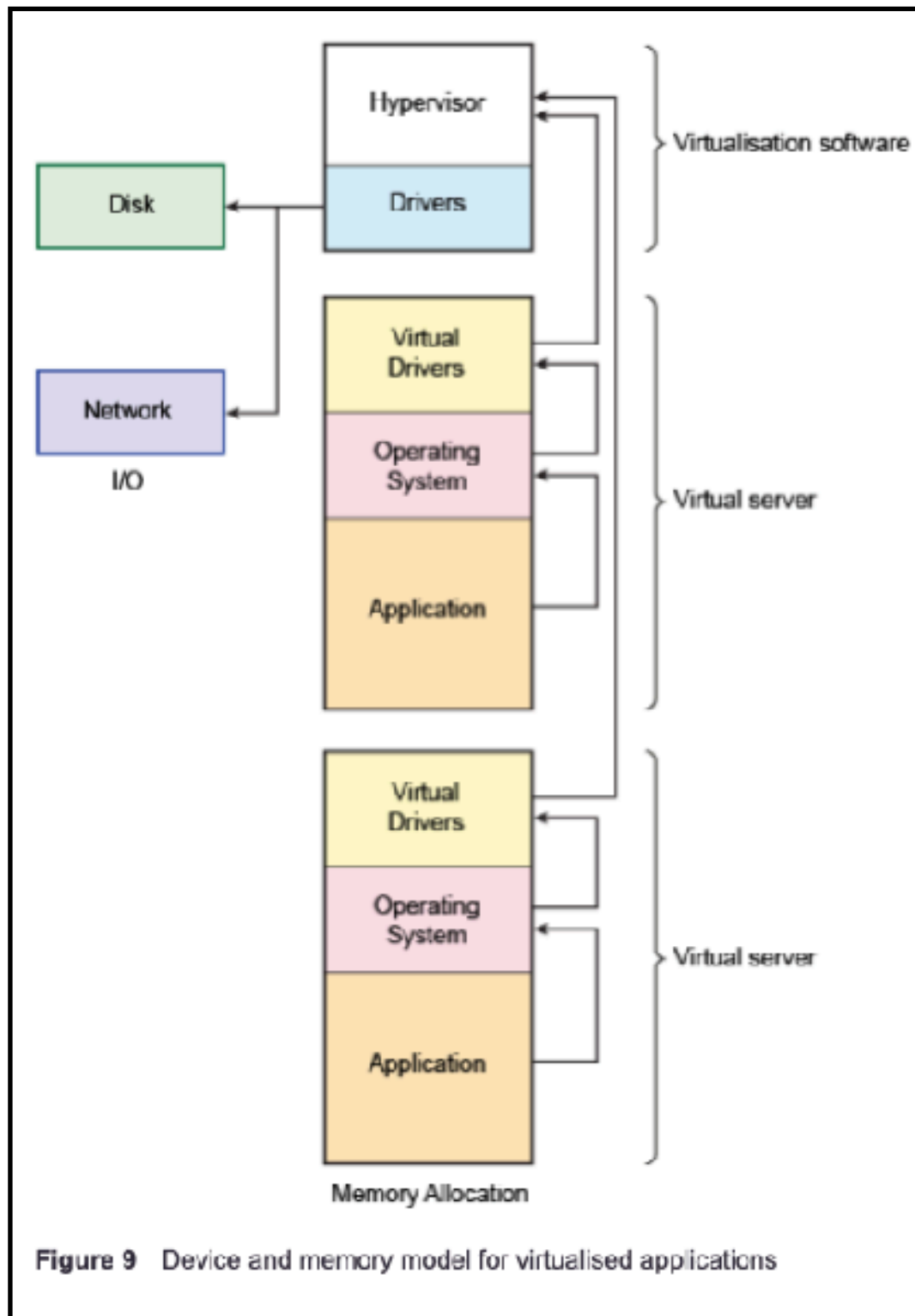
- Testing some codes and applications in many versions of operating systems.

- Developing distributed computations - One VM for the client-side and one for server-side.

- Running several applications on the same hardware at enterprise level : email, storage, customer relations management, case management system.

- Mobile devices emulators for Android, IOS, and other.

- Testing anti-viruses

Virtualised containers

- Development Operation (DevOps) : easier deployment, test

- Portability of applications

- Modularity: One container per functionality - UI interaction, Business logic, data storage, web logs, users access.

- Ideal for micro services and services oriented architecture.

Figure 10   Device and memory model for virtualised containers
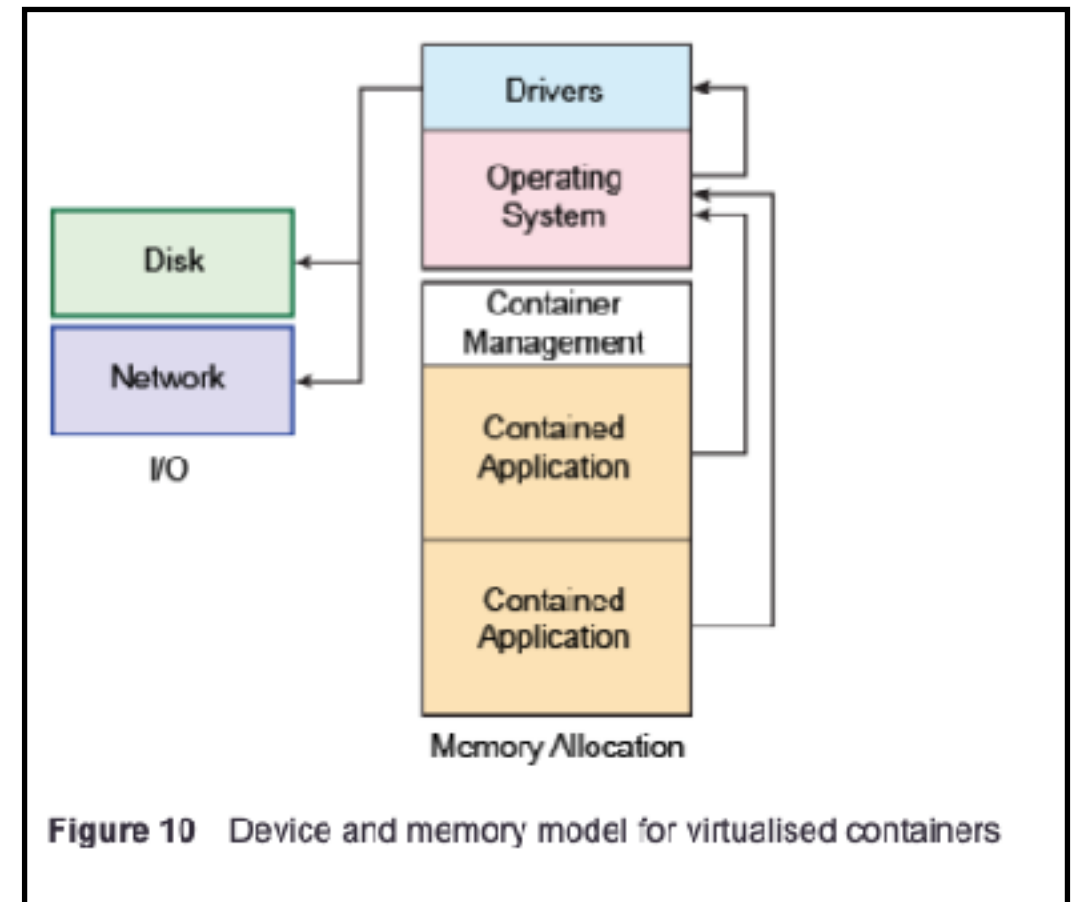
We have a white elephant in the room?

The cloud in reality!

Locations of some data centre

Without the Internet or network
No cloud

Software as a service
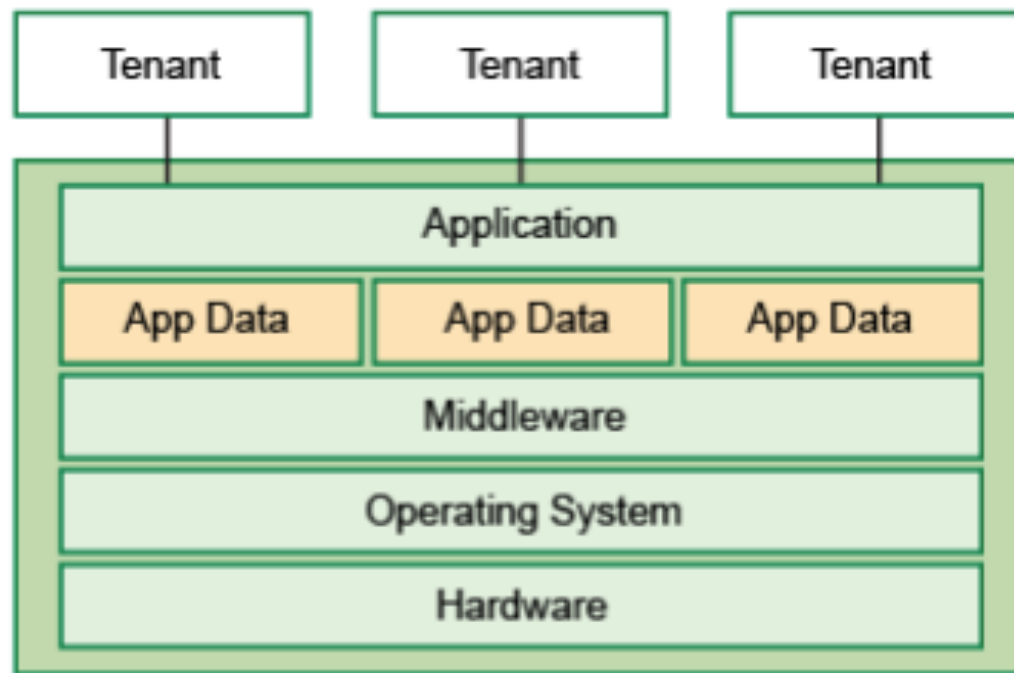
Tenant	Tenant	Tenant
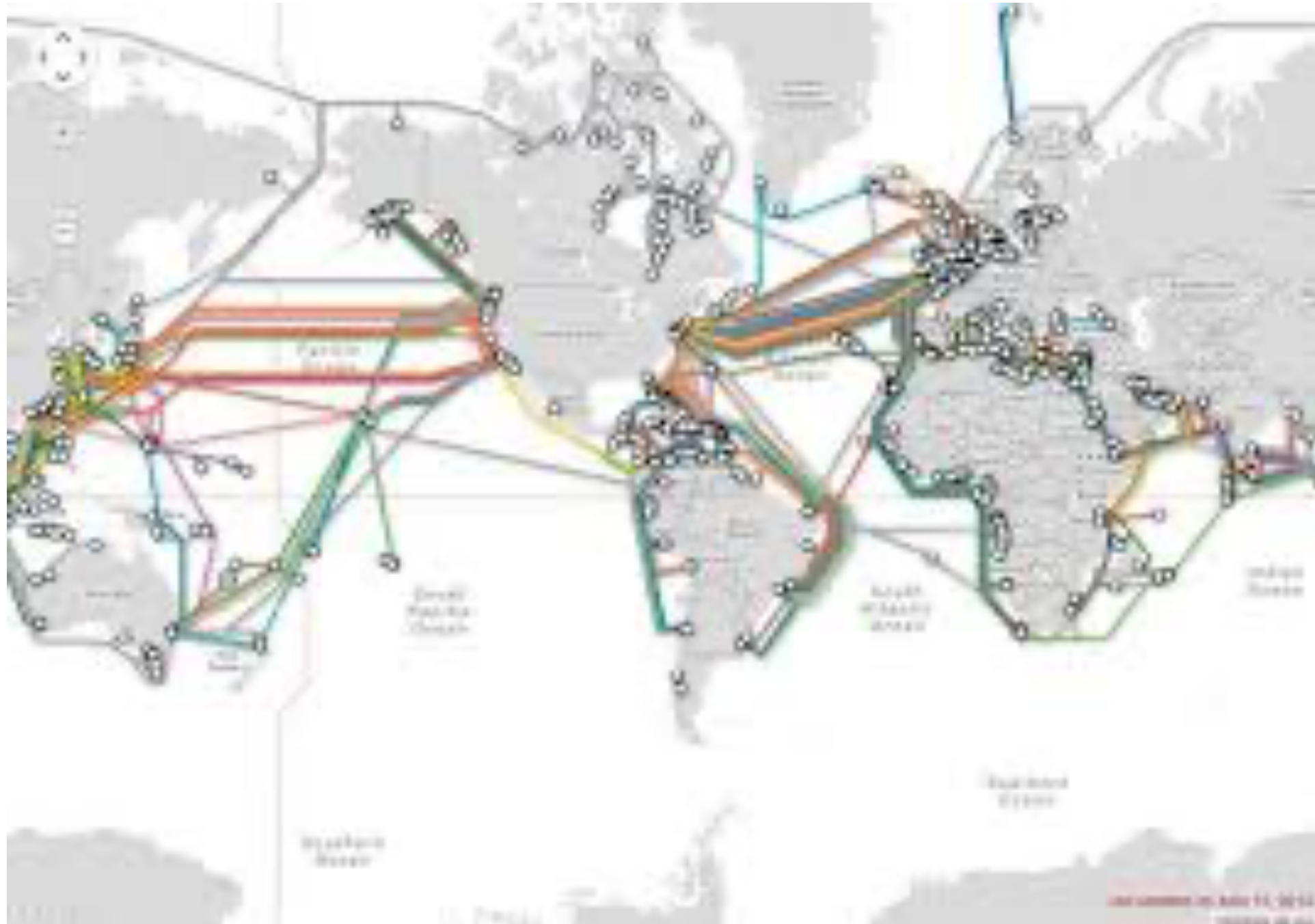
Application		
App Data	App Data	App Data
Middleware		
Operating System		
Hardware		

Figure 1 SaaS delivery model

Platform as a service

Tenant	Tenant	Tenant

Application	Application	Application
App Data	App Data	App Data
Middleware		
Operating System		
Hardware		
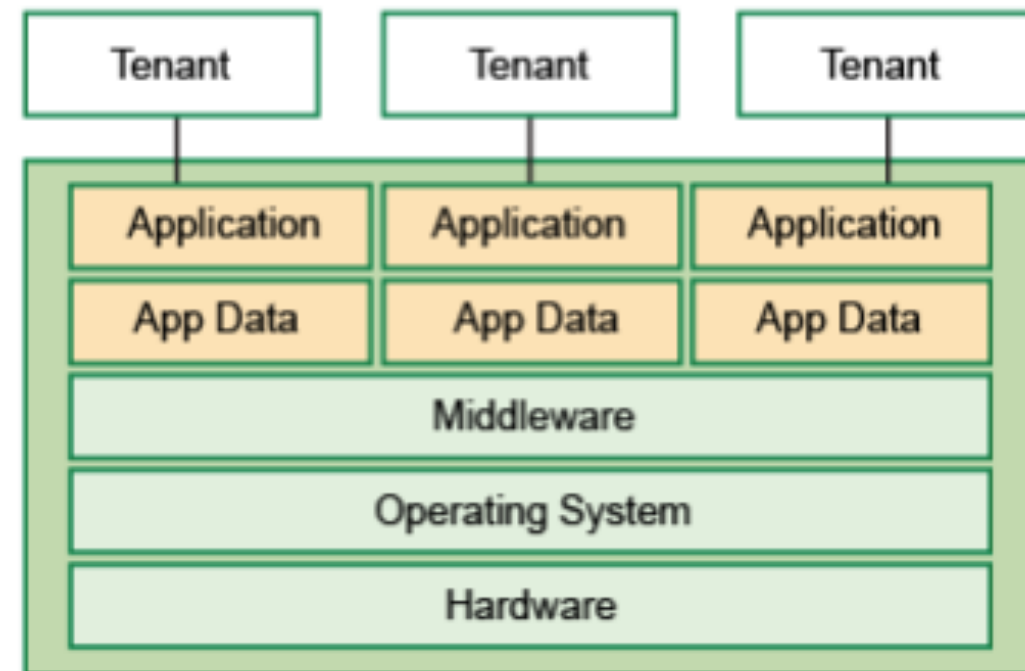
Figure 2 PaaS delivery model

Infrastructure as a service

Controlled by consumer

Tenant	Tenant	Tenant

Application	Application	Application
App Data	App Data	App Data
Middleware	Middleware	Middleware
Operating System		
Hardware		
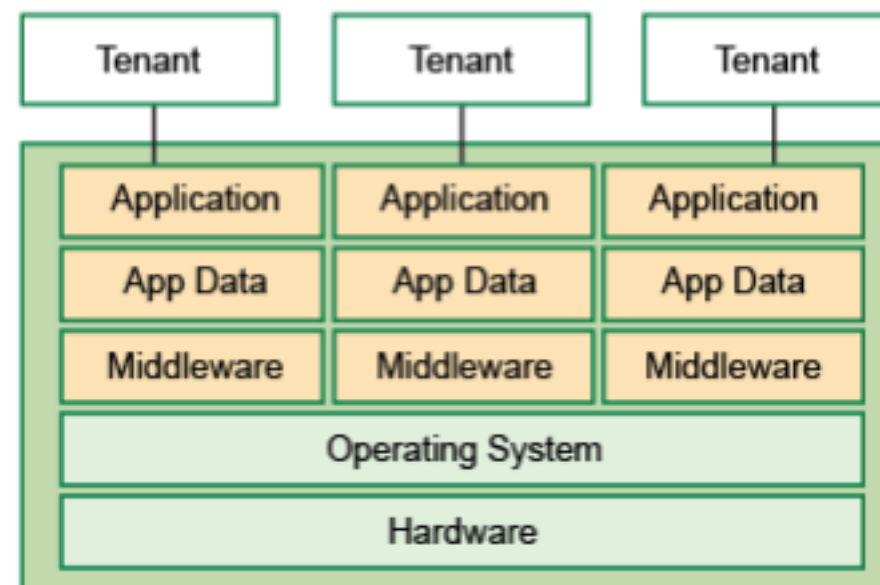
Figure 3 IaaS delivery model

Cloud Computing Models

On-Premises	IaaS Infrastructure as a Service	PaaS Platform as a Service	SaaS Software as a Service
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

Cloud Com

Inside the mainframe….

- Some virtual machines

- Some containers

- Let's find out with Google….

Let's discuss

How has virtualisation supported the decentralisation of IT facilities into the hands of few?

What are the dangers of such excessive use?

Open Stack an example

- https://www.openstack.org/ click me