# Linux Administration

## Installing and hosting a Linux system

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# Choosing a Linux distribution

- Multiple factors should be considered when choosing a Linux distribution:
  - hardware compatibility
  - available packages and software compatibility
  - technical support
  - cost
  - management, team and personal preferences
  - others
- You may need to change your choice later on, and migrate all your systems.

# Installation process

- Most Linux distributions will provide a wizard to help you during the installation process.
- Some steps may be simplified for you, others may not be available.
- Test multiple times to be comfortable with your choices; check the documentation.

# Creating a template

- Except in rare circumstances, you will need to deploy the same system to multiple machines.
- Create a base template (aka “Gold Image”) either with a minimum base or as close as possible from the final product, depending how homogenous your deployment is.
- Use scripts and deployment and configuration tools to configure each system individually.

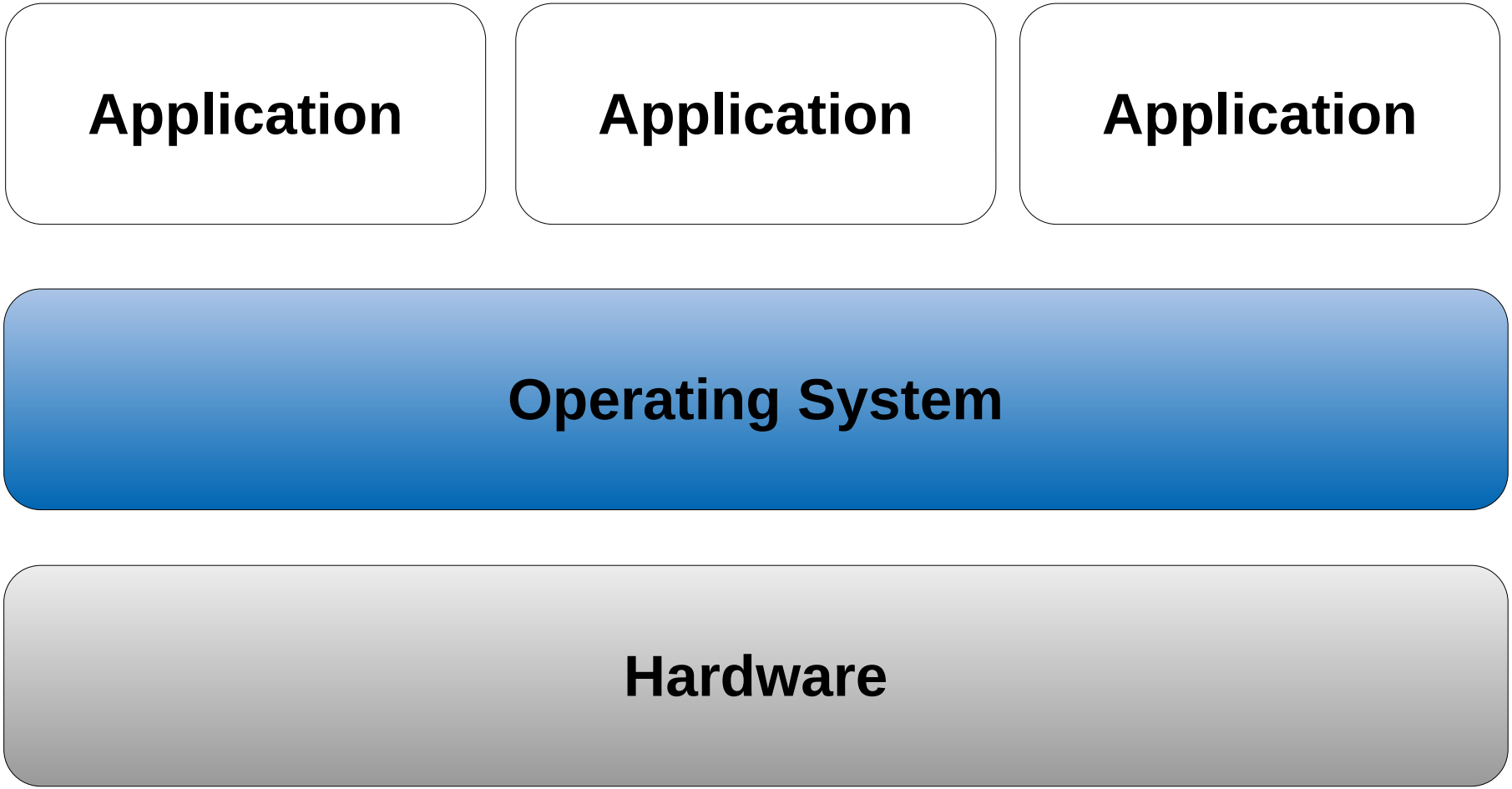
# Choosing a platform

Multiple options are available to deploy new systems:

- physical hardware (aka “bare metal”)
- virtual machine
- cloud hosted machine
- container

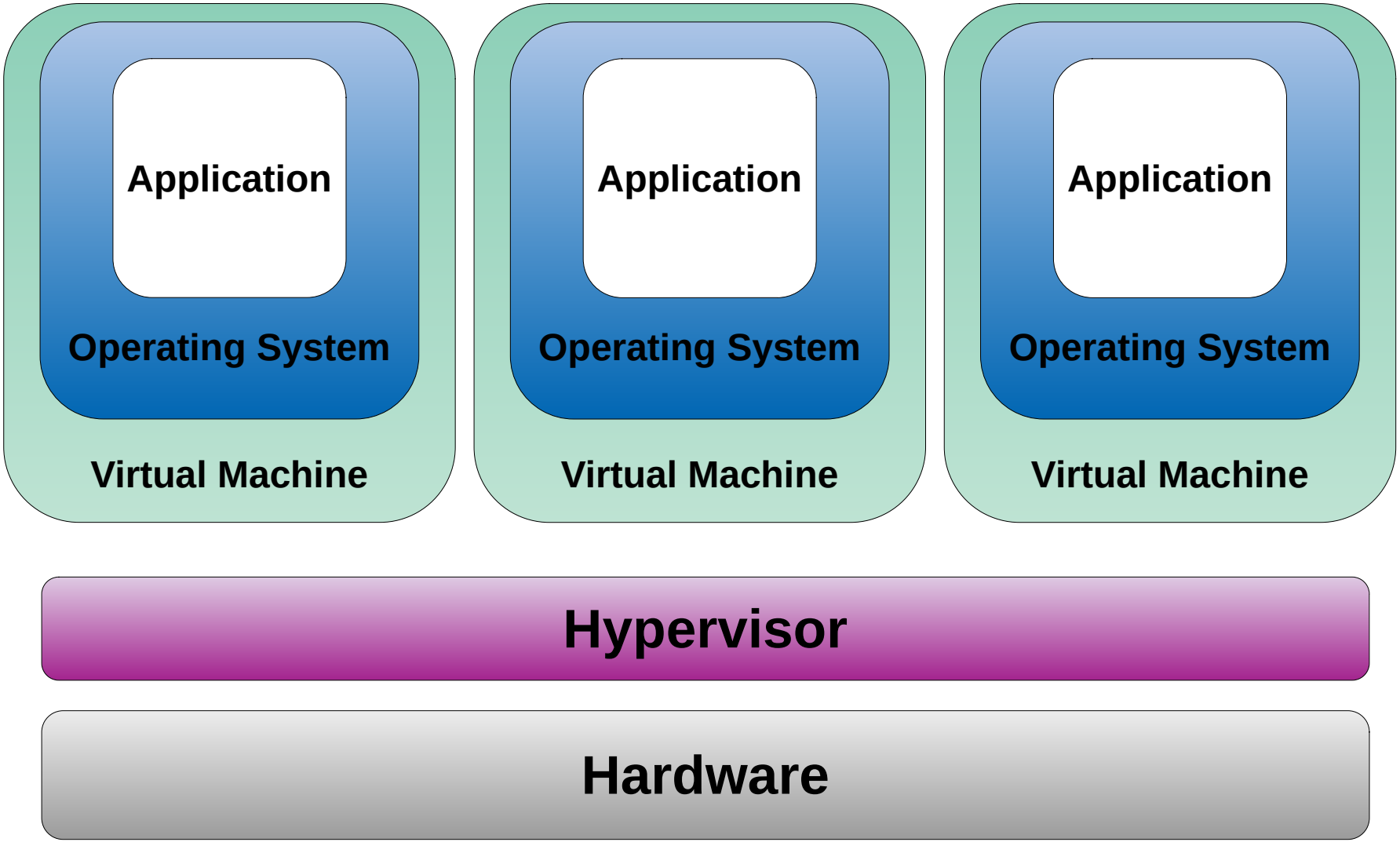
# Physical hardware

- Expensive.
- Require hardware maintenance and support contract.
- Can be hosted on premises, or in a data center (colocation).
- Less and less common.


Application
Application
Application
Operating System
Hardware

# Virtual machine

- Probably the most common solution as of today.
- Can be used as a simple “standalone” system or as a complex, redundant hosting architecture.
- Provides special additional features: snapshots, migration, failover.
- A physical server can be converted to a virtual machine.
- A virtual machine can be cloned to create similar systems.
- Major vendors: VMware vCenter/ESXi, Microsoft Hyper-V, Xen Project/Citrix Hypervisor.


Application
Operating System
Virtual Machine
Application
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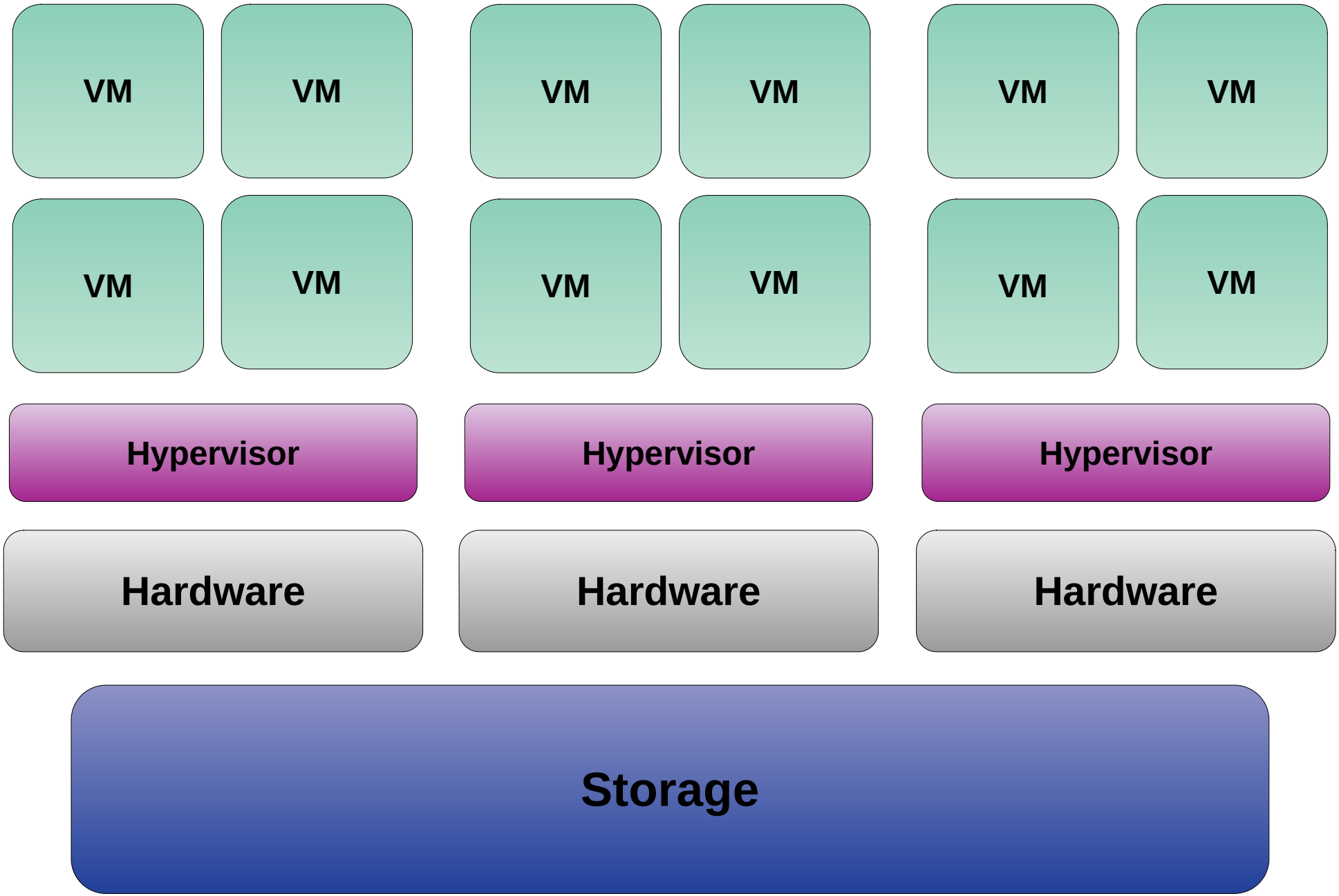
Virtual Machine
Application
Operating System
Virtual Machine
Hypervisor
Hardware


VM
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Hardware
Storage

# Cloud hosted machine

- A cloud machine is a virtual machine running on hardware that you don’t manage.
- Multiple solutions are available, and can be combined.
- Hourly, monthly or yearly billing cycle.
- Major vendors:
  - Amazon Web Services (AWS)
  - Google Cloud Platform (GCP)
  - Microsoft Azure

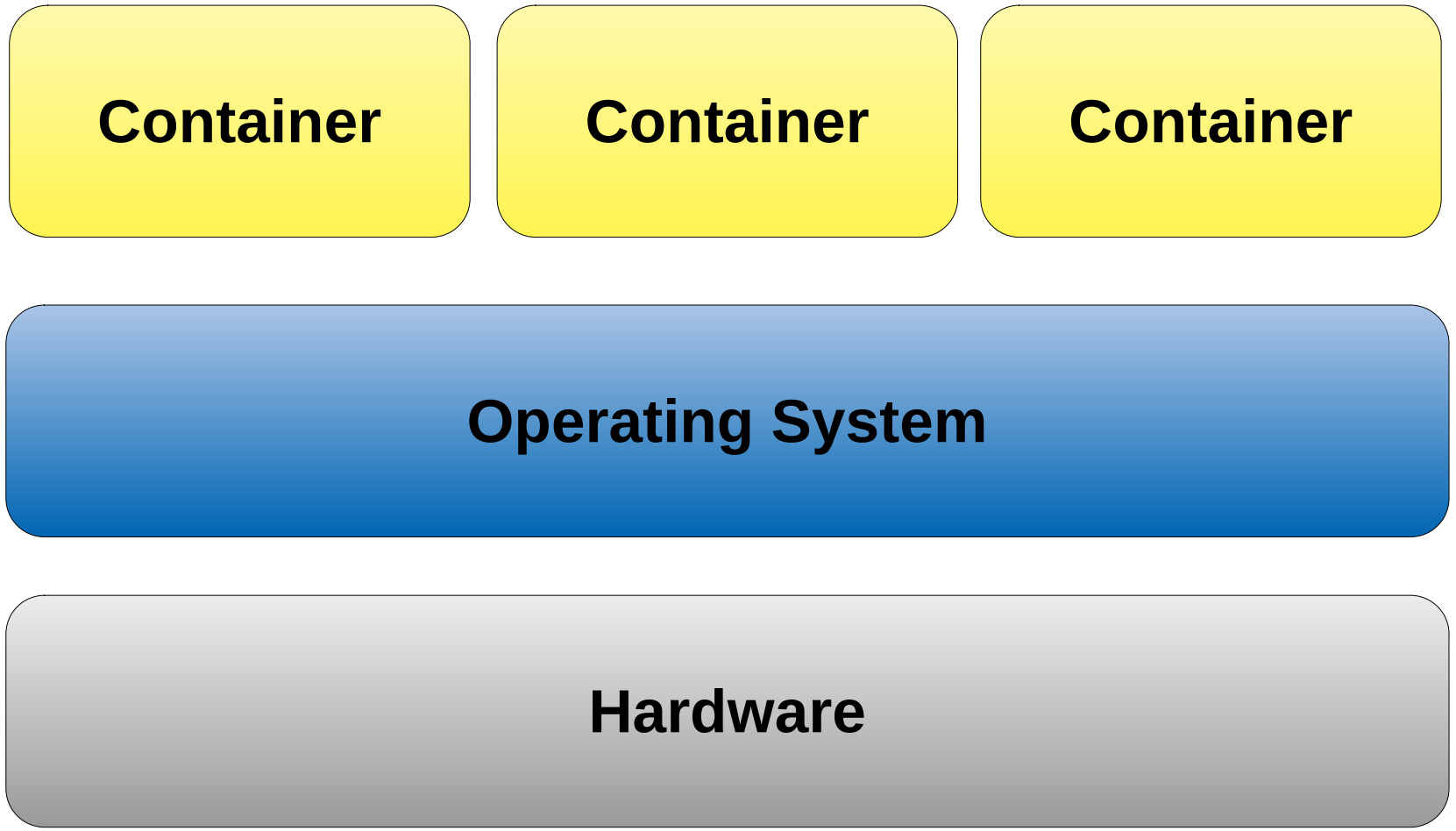
# Cloud responsabilities

Depending on the vendor that you are working with, you must pay attention on who is responsible for:

- System upgrades and patching
- Network access and security
- Application upgrades
- Data security and backups
- User access and permissions (identity management)
- Monitoring and logging

# Container

- Used mostly for a specific, limited tasks (microservices).
- Containers are often used in numbers.
- Disposable.
- Most common vendor: Docker/Kubernetes.


Container
Container
Container
Operating System
Hardware