

Introduction to Virtualisation

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WHAT IS VIRTUALIZATION?

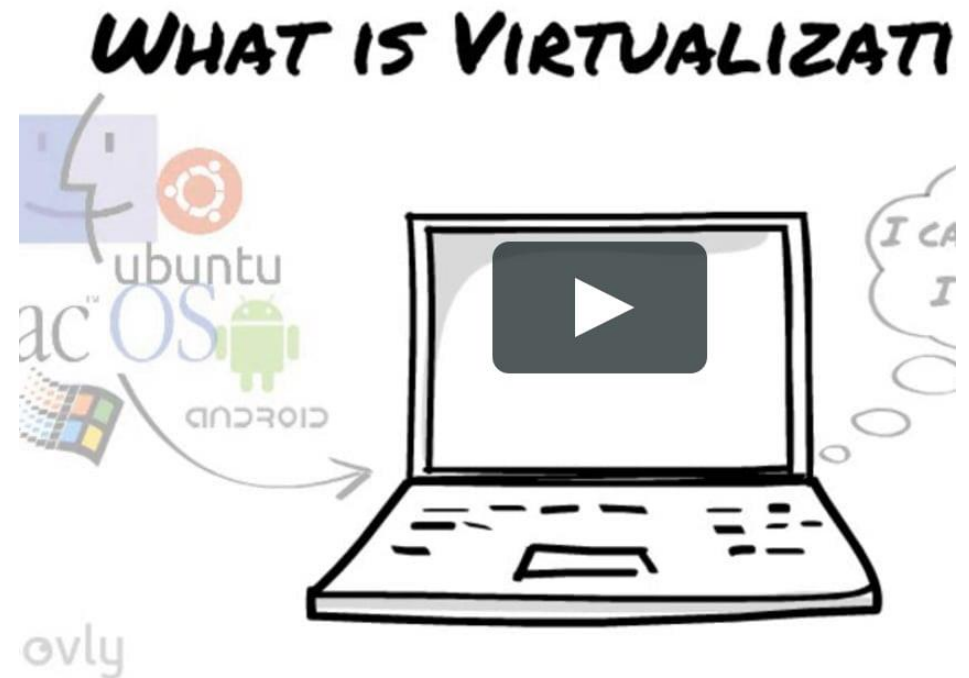


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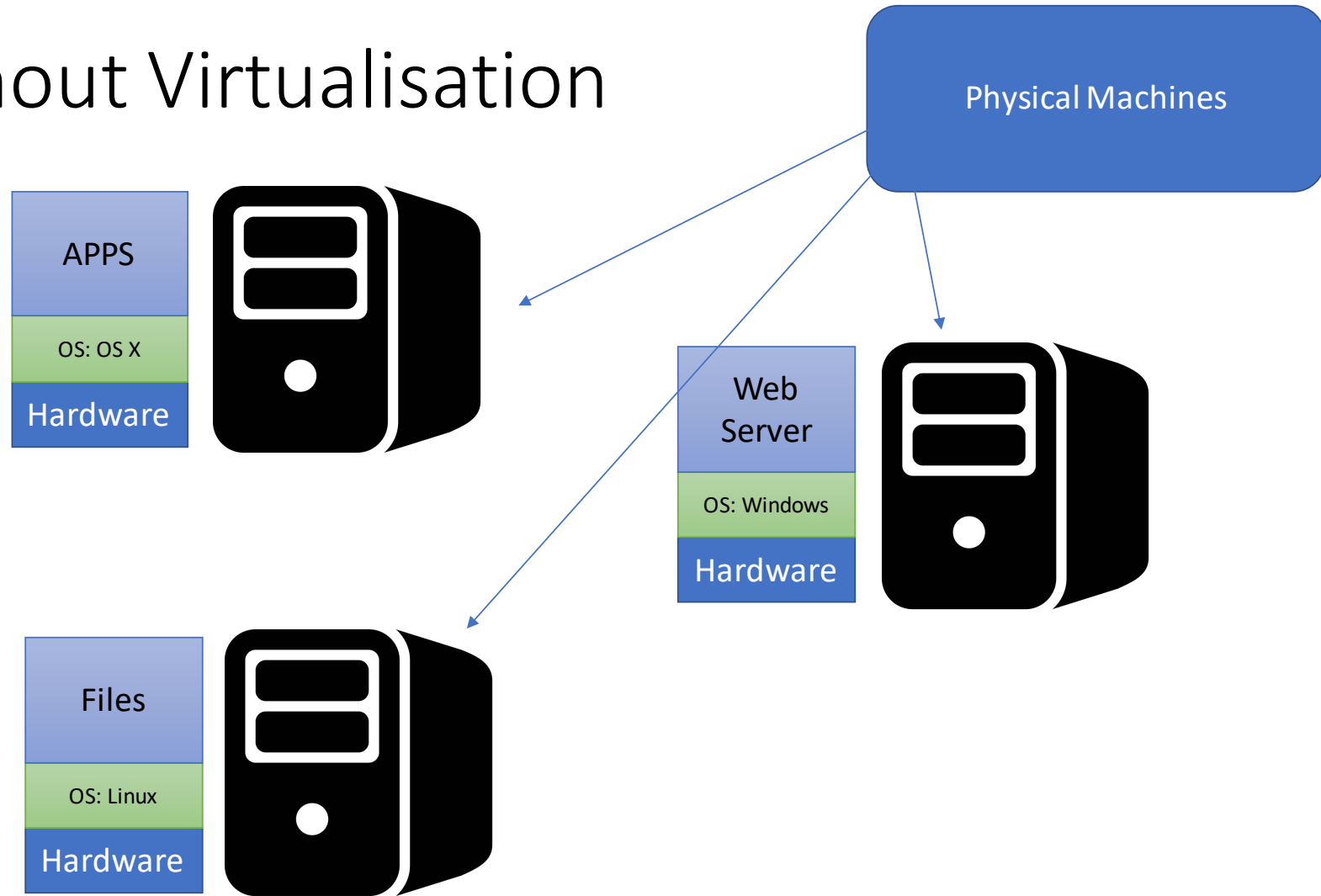
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Introduction

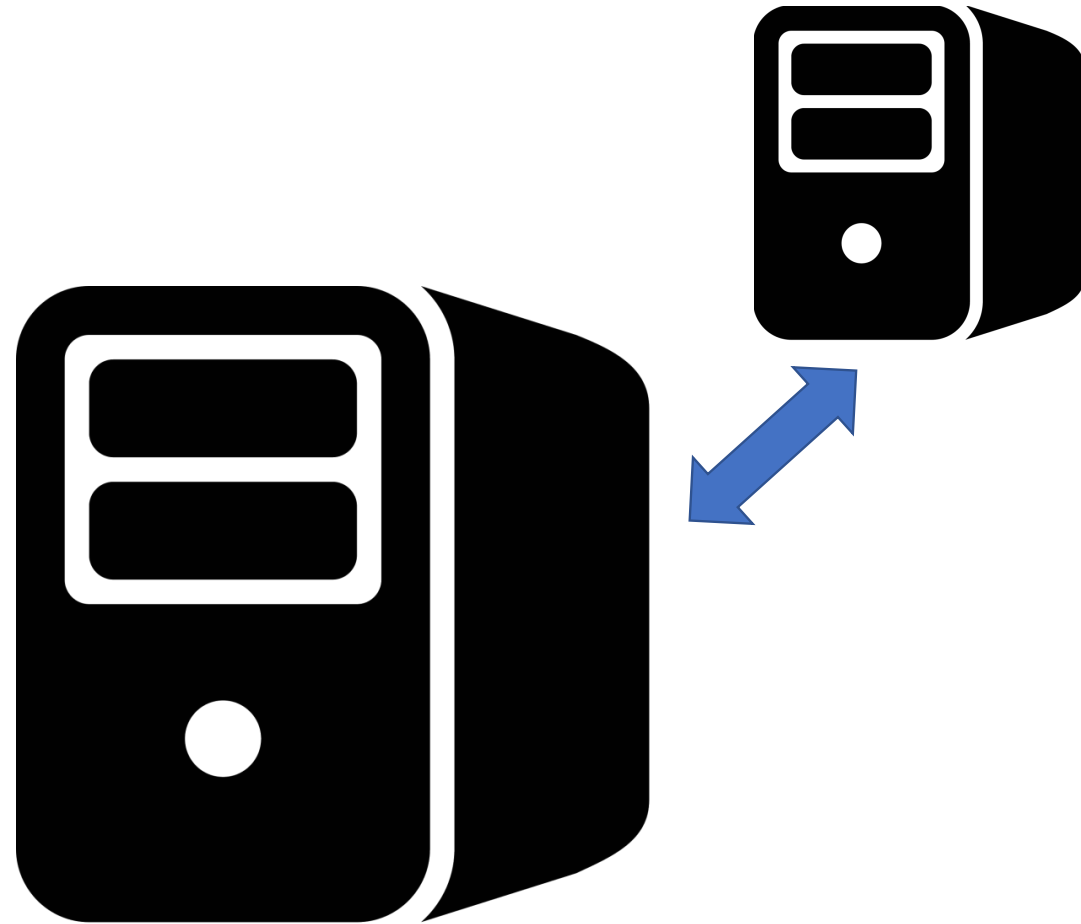
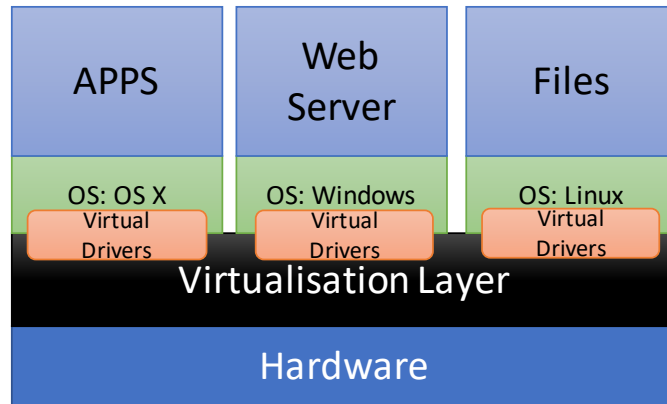
- Virtualisation: a technology used to simultaneously run multiple operating systems which are isolated from each other.
 - e.g. run both Linux and Windows on the same machine at the same time
- Virtualisation is NOT the same as dual boot:
 - Both OSes run **simultaneously**
- Note: lots of different types of virtualisation these days (network virtualisation, application visualisation)
- In this topic, we'll be talking about Operating System/Hardware Virtualisation, aka **Creating "Virtual Machines"**



Without Virtualisation



With Virtualisation



Hypervisor

- Used to create and run Virtual Machines
- Software layer that sits between Hardware and the Operating System
- Interacts with hardware
- One physical machine(**Host**) runs the Hypervisor software.
 - Provides interface to share available resources to Virtual machines
- Virtualises the hardware

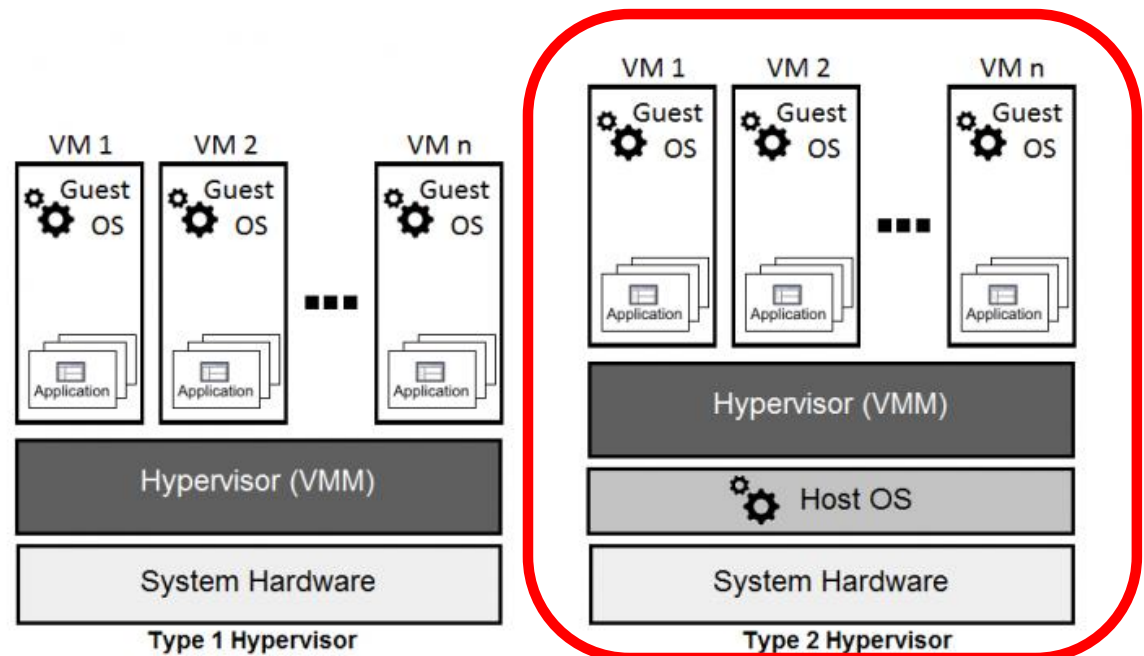
Hypervisor Types

Type 1:

run directly on the host's hardware to control the hardware and to manage guest operating systems. Sometimes referred to as "Bare Metal Hypervisor"

Type 2:

Runs on a conventional operating system (OS) just as other computer programs do. Sometimes referred to as "Hosted Hypervisor"



***This is what we're doing
with Virtual Box***

Why Virtualise

- Optimise resource usage
 - Your file server might only be at 10%
 - Your web server might be at 95%
 - Consolidate to one virtual infrastructure
- Simplification
- Portability
 - Entire virtual machine saved to file (e.g. *fxwalsh/labvm*)
- Security
 - Hardware isolated from operating systems
 - Recovery of OS can be easy – just like restoring a file
- Hardware/Platform Agnostic
 - Same Virtual Machine on different physical hosts (e.g. Mac and PC).
- Since 2007, more virtual servers were deployed than physical servers
 - source: "Virtualization Essentials", M. Portnoy, Wiley, ISBN: 978-1-118-17671-9

